Richardson Flat Park City, Utah



Remedial Investigation and Feasibility Study Oversight
July 2001



Technical Oversight Report

RESPONSE ACTION CONTRACT FOR REMEDIAL, ENFORCEMENT OVERSIGHT, AND NON-TIME CRITICAL REMOVAL ACTIVITIES AT SITES OF RELEASE OR THREATENED RELEASE OF HAZARDOUS SUBSTANCES IN EPA REGION VIII

U.S. EPA CONTRACT NO. 68-W5-0022

TECHNICAL OVERSIGHT REPORT - MAY 2001 SAMPLING EVENT FOR RICHARDSON FLAT TAILINGS SITE SUMMIT COUNTY, UTAH

Work Assignment No.: 088-RSBD-0894 Document Control No.: 3280-088-RT-MFOR-11685

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July 2001

Contents

| Section 1 Pr | oject Objective | 1-1 |
|--------------|---|-----|
| Section 2 Sa | mpling Activities Conducted by Date | |
| 2.1 | May 7, 2001 | 2-1 |
| | 2.1.1 Surface Water Sampling | |
| | 2.1.2 Onsite Depth of Cover Soil Sampling | |
| 2.2 | May 8, 2001 | |
| | 2.2.1 Onsite Depth of Cover Soil Sampling | |
| 2.3 | May 9, 2001 | |
| | 2.3.1 Onsite Depth of Cover Soil Sampling | |
| | 2.3.2 Offsite Soils | |
| | 2.3.3 Tailings Test Pits | |
| 2.4 | May 10, 2001 | |
| | 2.4.1 Offsite Soils | |
| | 2.4.2 Reference (background) Soils | |
| 2.5 | May 11, 2001 | |
| | 2.5.1 Sediment | |
| Section 3 Da | ta Quality Assessment | 3-1 |
| Section 4 Co | nclusions | 4-1 |
| Section 5 Re | commendations | 5-1 |

Appendices

Appendix A Data Validation Reports
Appendix B May 2001 Split Sample Comparison

Tables

- Table 1 Location and Sample Numbers of CDM Federal's Split and Duplicate Surface Water Samples Collected May 7th
- **Table 2 Location and Sample Numbers of CDM Federal's Split and Duplicate Onsite**Soil Samples Collected May 7th
- Table 3 Location and Sample Numbers of CDM Federal's Split Onsite Soil Samples Collected May 8th
- Table 4 Location and Sample Numbers of CDM Federal's Split Onsite Soil Samples
 Collected May 9th
- Table 5 Location and Sample Numbers of CDM Federal's Split and Duplicate Offsite Soil Samples Collected May 9th
- Table 6 Location and Sample Numbers of CDM Federal's Split and Duplicate Test Pit Tailing Samples Collected May 9th
- Table 7 CDM Federal Test Pit Split and Duplicate Locations
- Table 8 Location and Sample Numbers of CDM Federal's Split and Duplicate Offsite Soil Samples Collected May 10th
- Table 9 Location and Sample Numbers of CDM Federal's Split and Duplicate Reference (background) Soil Samples Collected May 10th
- Table 10 Location and Sample Numbers of CDM Federal's Split and Duplicate Sediment Samples Collected May 11th
- Table 11 Data Quality Assessment for Environmental Samples

Figures

Figure 1 Remedial Investigation Sample Locations

Figure 2 Remedial Investigation Sample Locations

Figure 3 Flow Chart for the Determination of Data Acceptability

Acronyms

CDM Federal Programs Corporation

DQOs data quality objectives

EPA United States Environmental Protection Agency

PE performance evaluation

PM Project Manager
QA quality assurance
QC quality control

RAC response action contract
Richardson Flat Richardson Flat Tailings Site

RI/FS remedial investigation/feasibility study

RL reporting limit

RMC Resource Management Consultants

RPDS relative percent differences RPM Remedial Project Manager

SAP Sampling and Analysis Plan, Remedial Investigation at Richardson

Flat

SOPS standard operating procedures
United Park United Park City Mines Company

UDEQ Utah Department of Environmental Quality

Section 1 Project Objective

CDM Federal's objective is to provide oversight and documentation of field activities conducted by United Park City Mines Company (UPCM) as part of the focused remedial investigation (RI)/feasibility study (FS). CDM Federal's sampling requirements can be found in Appendix G of the SAP. Oversight activities will help ensure that UPCM performs field investigations according to the approved site work plan, SAP, and standard operating procedures (SOPs).

Section 2 Sampling Activities Conducted by Date

2.1 May 7, 2001

CDM Federal arrived at the site at 11:00 am. Persons at the site included Kerry Gee of UPCM and three staff members from Resource Management Consultants (RMC). The field activities for the day included oversight and split sampling of surface water and depth of cover (onsite) soil. The weather was warm and sunny. Modified level D personal protection was used. CDM Federal filtered all split and duplicate dissolved surface water samples, using a Geotech Geoprobe 2 peristaltic pump (serial # E00004794), silicone tubing, and 0.45 micron disposable filters. No other field equipment was used.

2.1.1 Surface Water Sampling

Upon arrival, CDM Federal learned that RMC had begun sampling and had already sampled the two surface water locations where CDM Federal was to collect split samples according to Appendix G in the SAP. CDM Federal collected surface water samples and one duplicate at those two locations. Five bottles, as described in Table 2 of the SAP, were collected for each split and duplicate sample. CDM Federal collected all samples and filtered for dissolved metals in accordance with methods described in the SAP. All samples were kept on ice from the time of collection through shipment to the laboratory. CDM Federal conducted oversight on the final three sampling locations (CDM Federal sample locations 006, 007, and 008, RMC sample locations RF-3-2, RF-2, and RF-1). Table 1 presents UPCM sample locations, the UPCM sample numbers, and CDM Federal's sample numbers for the locations where surface water split and duplicate samples were collected on May 7th.

Table 1 Location and Sample Numbers of CDM Federal's Split and Duplicate Surface Water Samples Collected May 7th

| UPCM Sample Location | UPCM Sample Number | Split | Duplicate | CDM Federal Sample Number |
|----------------------------|-----------------------|-------|-----------|---------------------------|
| RF-6-2 | RF-SW-RF6-2 | х | | 01-E2-SW-003-0 |
| RF-6-2 | RF-SW-RF6-2 | | x | 01-E2-SW-303-0 |
| RF-7-2 | RF-SW-RF7-2 | X | | 01-E1-SW-002-0 |

Sample Results

Appendix **B** of this report presents the methods, results, and laboratory remarks for both the CDM Federal and UPCM samples. In addition, usability is noted based on criteria presented in section 4.

Deviations from the SAP

The two locations where CDM Federal, according to the SAP, was to collect split and duplicate samples had already been sampled by RMC earlier that morning. Therefore, the aliquot sequence presented in Table 3-1 of Appendix G in the SAP could not be followed for the samples collected by CDM Federal at these locations. In addition, oversight at those two locations, as well as locations RF-8, RF-5, and RF-4, was not conducted.

2.1.2 Onsite Depth of Cover Soil Sampling

RMC began the onsite soil sampling during the afternoon of May 7th. Sampling began at the northeast section of the site. Figure 5 from the SAP shows the grid pattern used to locate sampling sites. CDM Federal numbered the grid in the field starting with 001 in the northeast section. UPCM sample locations are listed on Figure 1, with CDM Federal sample locations in parenthesis. Sample locations were staked by RMC personnel prior to sampling. A shovel was used to dig a hole, not to exceed 1 foot in depth. The hole was inspected for a delineation of cover soil and tailings. If that delineation was found, a surface sample was taken at 0-2 inches and a depth sample was taken two inches above the tailings. If no delineation was found, a backhoe was used to dig a deeper hole where delineation could be found. The aliquot sequence presented in Table 3-1 of Appendix G in the SAP was followed for each split and duplicate sample. RMC collected all samples. All samples were kept on ice from the time of collection through shipment to the laboratory. Table 2 presents UPCM sample locations, the UPCM sample numbers, and CDM Federal's sample numbers for the onsite soil locations where splits and duplicates were taken on May 7th.

Table 2 Location and Sample Numbers of CDM Federal's Split and Duplicate Onsite Soil Samples Collected May 7th

| UPCM Sample Location | UPCM Sample Number | Split | Duplicate | CDM Federal Sample Number |
|----------------------------|-----------------------|-------|-----------|---------------------------|
| 41 | RF-ON-41 0-2" | х | | 01-E2-ON-001-2 |
| 3H | RF-ON-3H 0-2" | х | | 01-E2-ON-005-2 |
| 3H | RF-ON-3H 0-2" | | x | 01-E2-ON-305-2 |
| 5G | RF-ON-5G 0-2" | X | | 01-E2-ON-007-2 |
| 5G | RF-ON-5G 0-2" | | х | 01-E2-ON-307-2 |

All samples collected on May 7th, were packaged and shipped in accordance with CDM Federal's SOPs presented in Appendix G of the SAP. The samples were shipped overnight to Columbia Analytical Services in Kelso, Washington where samples were analyzed for parameters listed Appendix G of the SAP.

Sample Results

Appendix B of this report presents the methods, results, and laboratory remarks for both the CDM Federal and UPCM samples. In addition, usability is noted based on criteria presented in section 4.

Deviations from the SAP

CDM Federal was supposed to take a sample at location 003 (RMC 5H) according to Appendix G in the SAP. However, after digging with a backhoe, it was decided by RMC and CDM Federal that this sample location was off of the tailings impoundment. Using a random number generator, sample location 019 (RMC 3E) was selected as the alternate split sample location. This onsite soil sample split was subsequently collected on May 8th. Aliquot sequences for the duplicate samples (i.e., 005 and 007) were not followed.

2.2 May 8, 2001

CDM Federal arrived at the site at 8:30 am. Persons at the site included three staff members from RMC. The field activities for the day included oversight and split sampling of onsite soil. The weather was warm and sunny. Modified level D personal protection was used. CDM Federal did not use any field equipment on this day.

2.2.1 Onsite Depth of Cover Soil Sampling

The majority of the remaining onsite soil samples were collected on May 8th. RMC found that sample locations on the southern half of the tailings impoundment had substantial amounts of cover soil. Therefore, they decided to dig all of these holes with a backhoe. RMC collected all samples. All samples were kept on ice from the time of collection through shipment to the laboratory. Table 3 presents UPCM sample locations, the UPCM sample numbers, and CDM Federal's sample numbers for the onsite soil locations where split samples were collected on May 8th.

Table 3 Location and Sample Numbers of CDM Federal's Split Onsite Soil Samples Collected May 8th

| UPCM Sample Location | UPCM Sample Number | Split | Duplicate | CDM Federal Sample Number |
|----------------------------|-----------------------|-------|-----------|---------------------------|
| 2H | RF-ON-2H 0-2" | х | | 01-E2-ON-006-2 |
| 4G | RF-ON-4G 5-7" | х | | 01-E2-ON-008-7 |
| 3G | RF-ON-3G 0-2" | х | | 01-E2-ON-009-2 |
| 3E | RF-ON-3E 15-17" | х | | 01-E2-ON-019-18 |

Sample Results

Appendix B of this report presents the methods, results, and laboratory remarks for both the CDM Federal and UPCM samples. In addition, usability is noted based on criteria presented in section 4.

Deviations from the SAP

There were no deviations from this SAP on this day.

2.3 May 9, 2001

CDM Federal arrived at the site at 8:30 am. Persons at the site included three staff members from RMC. The field activities for the day included oversight and split sampling of onsite soil, offsite soil, and test pit tailings. The weather to start the day was cloudy and cool, but later turned sunny and warm. Modified level D personal protection was used: CDM Federal did not use any field equipment on this day.

2.3.1 Onsite Depth of Cover Soil Sampling

The remaining onsite soil samples were collected on May 9th. CDM Federal decided, due to the multiple sampling events occurring simultaneously on this day, to let RMC collect the remaining onsite cover soils including three split samples for CDM Federal without oversight. RMC collected all of the split samples. RMC reported that all samples were kept on ice from the time of collection until being transferred to CDM Federal and that they followed the aliquot sequence. Once CDM Federal regained custody of the samples, they were kept on ice through shipment to the laboratory. Table 4 presents UPCM sample locations, the UPCM sample numbers, and CDM Federal's sample numbers for the onsite soil locations where splits were collected on May 9th.

Table 4 Location and Sample Numbers of CDM Federal's Split Onsite Soil Samples Collected May 9th

| UPCM Sample Location | UPCM Sample Number | Split | Duplicate | CDM Federal Sample Number |
|----------------------------|-----------------------|-------|-----------|---------------------------|
| 4G | RF-ON-4G 0-2" | х | | 01-E2-ON-008-2 |
| 1E | RF-ON-1E 0-2" | x | | 01-E2-ON-021-2 |
| 3D | RF-ON-3D 0-2" | x | | 01-E2-ON-025-2 |

Sample Results

Appendix B of this report presents the methods, results, and laboratory remarks for both the CDM Federal and UPCM samples. In addition, usability is noted based on criteria presented in section 4.

Deviations from the SAP

According the SAP, CDM Federal was to collect an onsite soil sample at location 016 (RMC 1F). However, this location was beneath thirty feet of topsoil recently brought to the site, and was unable to be sampled due to the limitations of the sampling equipment to reach the necessary depth. Using a random number generator, sample location 021 (RMC 1E) was selected as the alternate split sample location. CDM Federal did not conduct oversight at three locations (i.e., CDM Federal sample locations 008, 021, and 025), due to other sampling occurring simultaneously at the site. CDM Federal asked RMC to follow the aliquot sequence in Appendix G in the SAP while sampling these locations, however because no oversight was conducted at these sampling locations, CDM Federal cannot say for sure that the aliquot sequence was followed.

2.3.2 Offsite Soils

Offsite soils were collected along three transects (two south and one north) outside of the tailings impoundment. CDM Federal numbered the sample locations in the field starting with 001 on the westernmost sample location on the north transect. UPCM sample locations are listed on Figure 1, with CDM Federal sample locations in parenthesis. RMC personnel staked the sampling locations prior to sampling. A shovel was used to dig a six-inch hole, and a sample was taken at both 0-2 inches and 1-6 inches. RMC collected all samples. The aliquot sequence presented in Table 3-1 of Appendix G in the SAP was followed for each split and duplicate sample. All samples were kept on ice from the time of collection through shipment to the laboratory. Table 5 presents UPCM sample locations, the UPCM sample numbers, and CDM Federal's sample numbers for the offsite soil locations where split and duplicate samples were taken on May 9th.

Table 5 Location and Sample Numbers of CDM Federal's Split and Duplicate

Offsite Soil Samples Collected May 9th

| UPCM | UPCM Sample | Split | Duplicate | CDM Federal Sample Number |
|----------|----------------|-------|-----------|---------------------------|
| Sample | Number | | | |
| Location | : | | | |
| ТЗА | RF-OF-T3A 0-2" | х | | 01-E2-OF-019-2 |
| ТЗВ | RF-OF-T3B 1-6" | х | | 01-E2-OF-020-6 |
| ТЗВ | RF-OF-T3B 1-6" | | х | 01-E2-OF-320-6 |
| T3F | RF-OF-T3F 1-6" | x | | 01-E2-OF-024-6 |
| T3D | RF-OF-T3D 0-2" | х | | 01-E2-OF-022-2 |
| T2H | RF-OF-T2H 1-6" | Х | | 01-E2-OF-016-6 |
| T2H | RF-OF-T2H 0-2" | х | | 01-E2-OF-016-2 |
| T2C | RF-OF-T2C 0-2" | х | | 01-E2-OF-011-2 |
| T2A | RF-OF-T2A 0-2" | Х | | 01-E2-OF-009-2 |

Sample Results

Appendix B of this report presents the methods, results, and laboratory remarks for both the CDM Federal and UPCM samples. In addition, usability is noted based on criteria presented in section 4.

Deviations from the SAP

Offsite soils were collected along three transects (two south and one north) outside of the tailings impoundment. According to the SAP, the two transects south of the tailings impoundment were suppose to have eleven sampling points. During the staking of these sample locations it was decided by Jim Christiansen (EPA) and Kerry Gee (UPCM), not to use the easternmost sampling location for these two transects because of their distance from the tailings impoundment. Therefore, instead of the 30 total sample locations originally discussed in the SAP, there were only 28.

2.3.3 Tailings Test Pits

Three tailings test pits were dug onsite. UPCM sample locations are listed on Figure 1, with CDM Federal sample locations in parenthesis. A backhoe was used to dig the tailings test pits. Sample depths were measured starting from the soil/tailings interface. Therefore, a 0-1 ft. sample was a sample taken from 0-1 ft. below the tailings/cover soil interface. RMC collected all samples. RMC reported that all samples were kept on ice from the time of collection until being transferred to CDM

Federal. Once CDM Federal regained custody of the samples, they were kept on ice through shipment to the laboratory. Table 6 presents UPCM sample locations, the UPCM sample numbers, and CDM Federal's sample numbers for the test pit tailings locations where split and duplicate samples were taken on May 9th.

Table 6 Location and Sample Numbers of CDM Federal's Split and Duplicate Test

Pit Tailing Samples Collected May 9th

| UPCM Sample Location | UPCM Sample Number | Split | Duplicate | CDM Federal Sample Number |
|----------------------------|--------------------|-------|-----------|---------------------------|
| TP1 | RF-TA-TP1 3' | х | | 01-E2-TA-001-3 |
| TP1 | RF-TA-TP1 3' | | X | 01-E2-TA-301-3 |
| TP2 | RF-TA-TP2 4' | x | | 01-E2-TA-002-4 |
| TP3 | RF-TA-TP3 2' | х | | 01-E2-TA-003-1 |

Sample Results

Appendix B of this report presents the methods, results, and laboratory remarks for both the CDM Federal and UPCM samples. In addition, usability is noted based on criteria presented in section 4.

Deviations from the SAP

RMC made an in-the-field decision to dig three test pits during this sampling event instead of the planned five test pits discussed in the SAP. Therefore, based on a frequency of 20% for split samples, CDM Federal made the decision to take three split and one duplicate sample versus five split and one duplicate sample discussed in Appendix G of the SAP. The new test pit split and duplicate locations with depths are presented in Table 7.

Table 7 CDM Federal Test Pit Split and Duplicate Locations

| Test Pit | Depth |
|------------|------------------|
| Test Pit 1 | 2-3′ |
| Test Pit 1 | 2-3' (duplicate) |
| Test Pit 2 | 3-4' |
| Test Pit 3 | 0-2' |

2.4 May 10, 2001

CDM Federal arrived at the site at 8:30 am. Persons at the site included three staff members from RMC. The field activities for the day included oversight and split sampling of offsite and background soil. The weather was sunny and warm. Modified level D personal protection was used. CDM Federal did not use any field equipment on this day.

2.4.1 Offsite Soils

The remaining offsite soils were sampled during the morning of May 10th. RMC collected all samples. The aliquot sequence presented in Table 3-1 of Appendix G in the SAP was followed for each split and duplicate sample. All samples were kept on ice from the time of collection through shipment to the laboratory. Table 8 presents UPCM sample locations, the UPCM sample numbers, and CDM Federal's sample numbers for the offsite soil locations where split and duplicate samples were taken on May 10th.

Table 8 Location and Sample Numbers of CDM Federal's Split and Duplicate Offsite Soil Samples Collected May 10th

| UPCM Sample Location | UPCM Sample Number | Split | Duplicate | CDM Federal Sample Number |
|----------------------------|-----------------------|-------|-----------|---------------------------|
| T1B | RF-OF-T1B 1-6" | Х | · | 01-E2-OF-002-6 |
| TIC | RF-OF-T1C 1-6" | Х | | 01-E2-OF-003-6 |
| TID | RF-OF-T1D 0-2" | х | | 01-E2-OF-004-2 |
| TID | RF-OF-T1D 0-2" | | · x | 01-E2-OF-304-2 |
| T1F | RF-OF-T1F 0-2" | Х | | 01-E2-OF-006-2 |

Sample Results

Appendix B of this report presents the methods, results, and laboratory remarks for both the CDM Federal and UPCM samples. In addition, usability is noted based on criteria presented in section 4.

Deviations from the SAP

There were no deviations from the SAP.

2.4.2 Reference (background) Soils

CDM Federal numbered in the field reference sample locations presented on Figure 2 of the SAP. CDM Federal sample locations were determined using Figure 2 and which were staked prior to sampling. UPCM sample locations along with CDM Federal sample locations in parenthesis are presented on Figure 2 of this document. A shovel was used to dig a hole, and a sample was collected at 0-2 inches. RMC collected all samples. All samples were kept on ice from the time of collection through shipment to the laboratory. Table 9 presents UPCM sample locations, the UPCM sample numbers, and CDM Federal's sample numbers for the reference (background) soil locations where split and duplicate samples were taken on May 10th.

Table 9 Location and Sample Numbers of CDM Federal's Split and Duplicate Reference (background) Soil Samples Collected May 10th

| UPCM Sample Location | UPCM Sample Number | Split | Duplicate | CDM Federal Sample Number |
|----------------------|-----------------------|-------|-----------|---------------------------|
| BG-3 | RF-BG-BG3 | х | | 01-E2-RF-003-2 |
| BG-3 | RF-BG-BG3 | | х | 01-E2-RF-303-2 |
| BG-4 | RF-BG-BG4 | X | | 01-E2-RF-004-2 |

Sample Results

Appendix B of this report presents the methods, results, and laboratory remarks for both the CDM Federal and UPCM samples. In addition, usability is noted based on criteria presented in section 4.

Deviations from the SAP

Two teams were used to collect all of the reference (background) samples on May 10th. As a result, CDM Federal was unable to oversee all of the reference sampling. CDM Federal observed sampling at locations 003, 004, 006, 007, 008, and 009.

Based on draft versions of the SAP, CDM Federal assumed thirty reference (background) sampling locations. The final version of the SAP described only eleven sampling locations. Therefore, CDM Federal needed to change its planned estimate of six duplicates and one split. It was decided in the field, based on a frequency of 20% for split samples, to only collect two split samples and one duplicate sample. The first two split sample locations (003 and 004) and the duplicate location (003) presented on Table 3-1 in Appendix G of the SAP were used. In addition, because the estimated number of sampling locations had changed, the aliquot sequence presented on Table 3-1 in Appendix G of the SAP was not followed.

2.5 May 11, 2001

CDM Federal arrived at the site on at 8:00 am. Persons at the site included three staff members from RMC. The field activities for the day included oversight and split sampling of sediment in the diversion ditch. The weather was sunny and warm. Modified level D personal protection was used. CDM Federal did not use any field equipment on this day.

2.5.1 Sediment

CDM Federal numbered the sampling locations in the field starting with 001 at the westernmost location. Sample locations were determined using Figure 5 in the SAP. UPCM sample locations along with CDM Federal sample locations in parenthesis are listed on Figure 1. RMC used a stainless steel corer to collect the samples. All samples were kept on ice from the time of collection through shipment to the laboratory. Table 10 presents UPCM sample locations, the UPCM sample numbers, and CDM Federal's sample numbers for the sediment locations where splits and duplicates were taken on May 11th.

Table 10 Location and Sample Numbers of CDM Federal's Split and Duplicate Sediment Samples Collected May 11th

| UPCM Sample Location | UPCM Sample Number | Split | Duplicate | CDM Federal Sample Number |
|----------------------|-----------------------|-------|-----------|---------------------------|
| SD-1 | RF-SD-SD1 0-6" | Х | | 01-E2-SD-001-6 |
| SD-1 | RF-SD-SD1 0-6" | | X | 01-E2-SD-301-6 |

All samples collected between May 8th and May 11th were packaged and shipped in accordance with CDM Federal's SOPs presented in Appendix G of the SAP. The samples were shipped overnight to Columbia Analytical Services in Kelso, Washington where samples were analyzed for parameters listed Appendix G of the SAP.

Sample Results

Appendix B of this report presents the methods, results, and laboratory remarks for both the CDM Federal and UPCM samples. In addition, usability is noted based on criteria presented in section 4.

Deviations from the SAP

Originally, CDM Federal assumed ten sediment sampling locations, however the final version of the SAP presented only six sample locations. Therefore, based on a frequency of 20% for splits, CDM Federal only took one split sample and one duplicate sample versus two split samples and one duplicate sample discussed in Appendix G of the SAP.

According to the SAP, two groundwater monitoring wells were to be installed along Silver Creek, and two piezometers were to be installed south of the tailings impoundment. It was decided by Kerry Gee (UPCM) and Jim Frike (RMC) to install two additional monitoring wells south of the tailings impoundment in place of the piezometers. Originally the plan was to have all groundwater monitoring wells installed by Friday May 11th, and sample them on Monday May 14th. However, a call to CDM Federal from RMC on Monday May 14th indicated that there were problems installing the wells, and that installation and ground water sampling would not happen before Tuesday May 29th. CDM Federal coordinated with Mo Slam of the Utah Department of Environmental Quality (UDEQ) to collect and ship the split and duplicate samples for analysis.

Section 3 Data Quality Assessment

Section 2 of Appendix G in the SAP outlines data quality objectives for this project. Table 11 presents an assessment of data quality related to field investigation oversight.

Table 11 Data Quality Assessment for Environmental Samples

| DQO Step | Project Objective Description | Assessment |
|---------------------------------|---|--|
| 1: Problem Statement | The objective is to provide oversight and documentation of field activities conducted by UPCM as part of the focused RI/FS. Oversight activities will help ensure that UPCM performs field investigations according to the approved site work plan, SAP, and SOPs. | Field sampling oversight was conducted to assess the problem statement. |
| 2: Identify the Decision | Are the data that UPCM collects during the focused RI/FS field investigation representative of current site conditions? | Surface water, onsite soil, offsite soil, background soil, and tailings samples were collected by CDM Federal personnel and analyzed and compared to UPCM data to determine whether UPCM data may represent current site conditions. |
| 3: Inputs to the Decision | Concentrations of analytes listed in Table 2 (UPCM 2001) in samples of surface water, soil, and sediment collected by both CDM Federal and UPCM. | Samples for all media were analyzed to determine the concentration of analytes. |
| 4: Study Boundaries | The horizontal spatial boundaries are identified in Figure 2 of UPCM's work plan (UPCM 2000). The vertical spatial boundaries are from the natural ground surface to 40 feet below ground surface. Temporal boundaries are from the time tailings were first placed on site (prior to 1950) to the present day. | Samples for all media were collected within the horizontal and vertical spatial boundaries. |
| 5: Decision Rule | For this investigation the actual concentration values of parameters listed in Table 2 (UPCM 2001) will be used to make decisions. These concentrations in split samples of surface water, soil, and sediment compared to concentrations of the same analytes in the original samples collected by UPCM. The RPDs will be calculated if both results are positive and > 5 reporting limit. The action level for the RPDs are <35 percent for water, and <50 percent for solids. If either result is < 5 times the reporting limits, then the action level is < 2 times the reporting limits for surface water and < 4 times for solids. If either concentration is non-detect, then there are no evaluation criteria. | RPDs were calculated, where appropriate, for the CDM Federal/UPCM split samples. These RPDs were then evaluated. If either result was less than five times the reporting limit, the reporting limits were evaluated. |
| 6: Limits of Decision Errors | For this project no "gray region" has been established. However, tolerable decision limits have been established to allow decision-makers to use professional judgment when necessary. For a water matrix, the tolerable decision limit is ± 10 percent (i.e., 25 percent – 45 percent) for RPDs and ± 1 | No samples fell within the tolerable decision limits. |

| DQO Step | Project Objective Description | Assessment |
|---|--|---|
| | reporting limit for results < 5 times reporting limits. For soil and sediment matrices the tolerable decision limit is \pm 10 percent for RPDs and \pm 1 reporting limits for results < 5 times reporting limits | |
| 7: Optimize the Decision for Obtaining Data | Identify the most resource-effective sampling design that generates data to satisfy the DQOs in the previous steps. | The SAP (UPCM 2001) provided procedures for sampling and analysis to satisfy DQOs for this project and was approved by EPA. Deviations from the SAP did not affect quality of data collected. |

Section 4 Conclusions

When taking a quality control (QC) sample (i.e., split sample) a method needs to be established to determine if the concentration of an analyte in the original sample (i.e. UPCM sample) is similar to the concentration of that analyte in the split sample (i.e., CDM Federal sample). Figure 3 presents the process established in the Contract Laboratory Guidelines for Inorganic Data Review (EPA 1994) to make such a comparison. If it is determined that the two samples are similar (i.e., acceptable), that indicates that most likely the concentration of the analyte in the original sample is representative of current site conditions. However, theoretically both samples could be wrong and therefore it cannot be said with one hundred percent confidence that data considered acceptable is representative of site conditions.

A total of 222 samples were compared using this method and eighty seven percent are considered to be acceptable based on the guidelines. Selenium was the only chemical in soil to have one hundred percent acceptability. This means that all of the original and split samples had similar concentrations and therefore the original sample concentrations are considered to be representative of current site conditions. The majority of the remaining chemicals had acceptability percentages that ranged from 83 and 92 percent. Lead and zinc, were the only chemicals to have low acceptability (68% and 69% respectively), which indicates that it is less certain that the original samples are representative of current site conditions for these chemicals.

Many of the samples with criteria outside of the acceptable range were most likely due to the fact that the sample was a mixture of tailings and soil (e.g., taken at the interface between the two media). Because these two materials may have very different concentrations of analytes, the mixture was very heterogeneous and homogeneity may not have been accomplished in the field. Also, due to the heterogeneity of the material it is difficult to determine what concentrations of analytes are actually representative of site conditions. Another possible explanation is that each lab used a different method in analyzing soil (CDM Federal Method 6020 and UPCM Method 6010). This analytical difference did not have an effect on other chemicals, however it cannot be ruled out as a possible contributor to the differences seen in the data.

Water samples meet the acceptance criteria for every chemical except total and dissolved copper. The CDM Federal water samples, however, are not considered split samples because they were collected at a later time than the UPCM samples. Therefore, they cannot be used to determine if the UPCM samples are representative of site conditions at the time of their sampling. The split and duplicate CDM Federal water samples (01-E2-SW-003-0 and 01-E2-SW-303-0) were evaluated and for each chemical there was 100% acceptability.

Section 5 Recommendations

CDM Federal recommends that two actions be taken during the next sampling event to determine why there are differences between CDM Federal and UPCM data. The first is to send a performance evaluation (PE) sample consisting of all of the relevant analytes to both laboratories. This would determine if there was a lab effect that could explain the differences in the data. The second suggestion would be to have the CDM Federal laboratory analyze twenty percent of the samples by both methods. This would determine if there was a method effect that could explain the differences in the data. At this point in time to be on the conservative side, the highest concentrations should be used as representative of current site conditions.

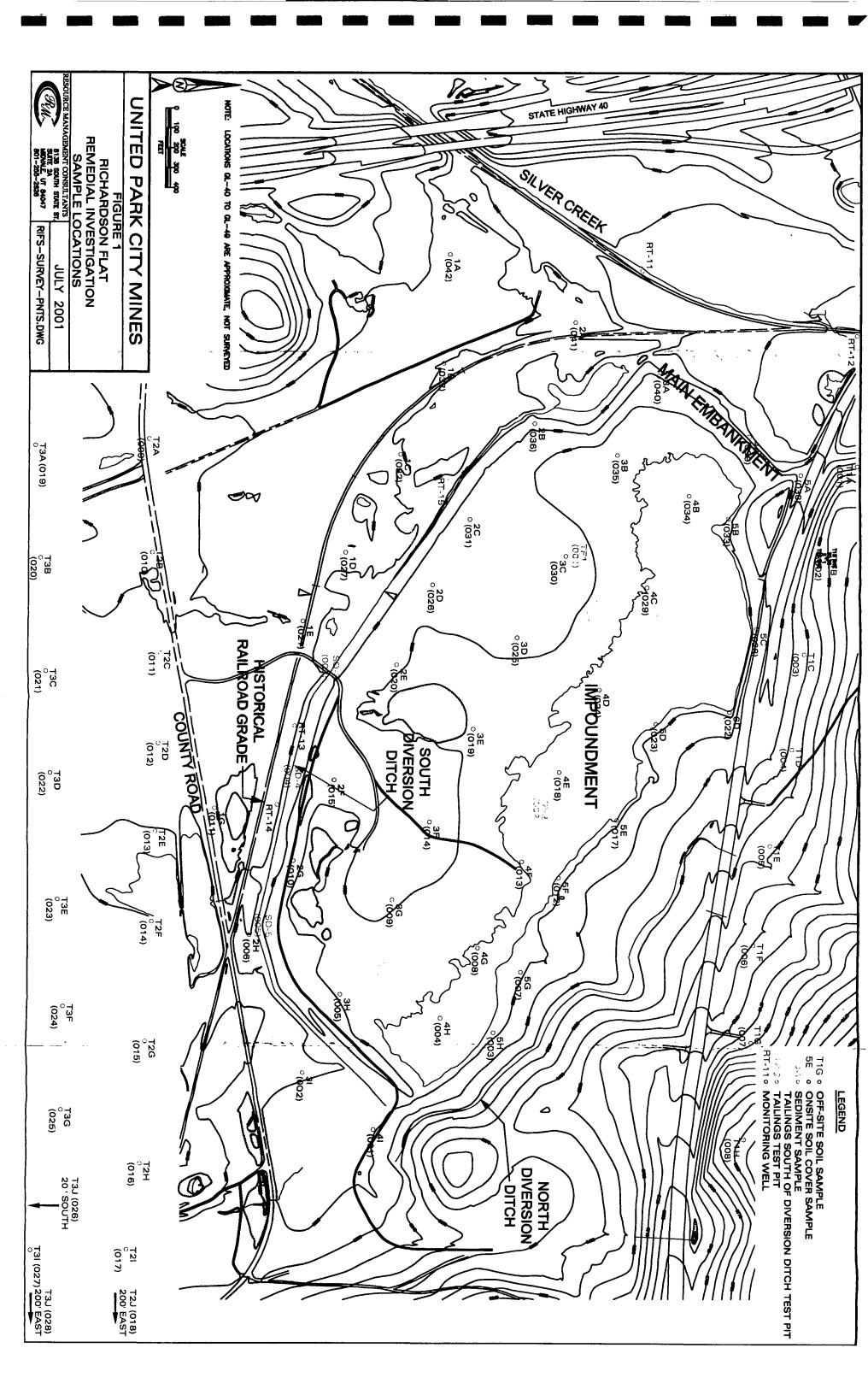
Tabbed Page: Figures

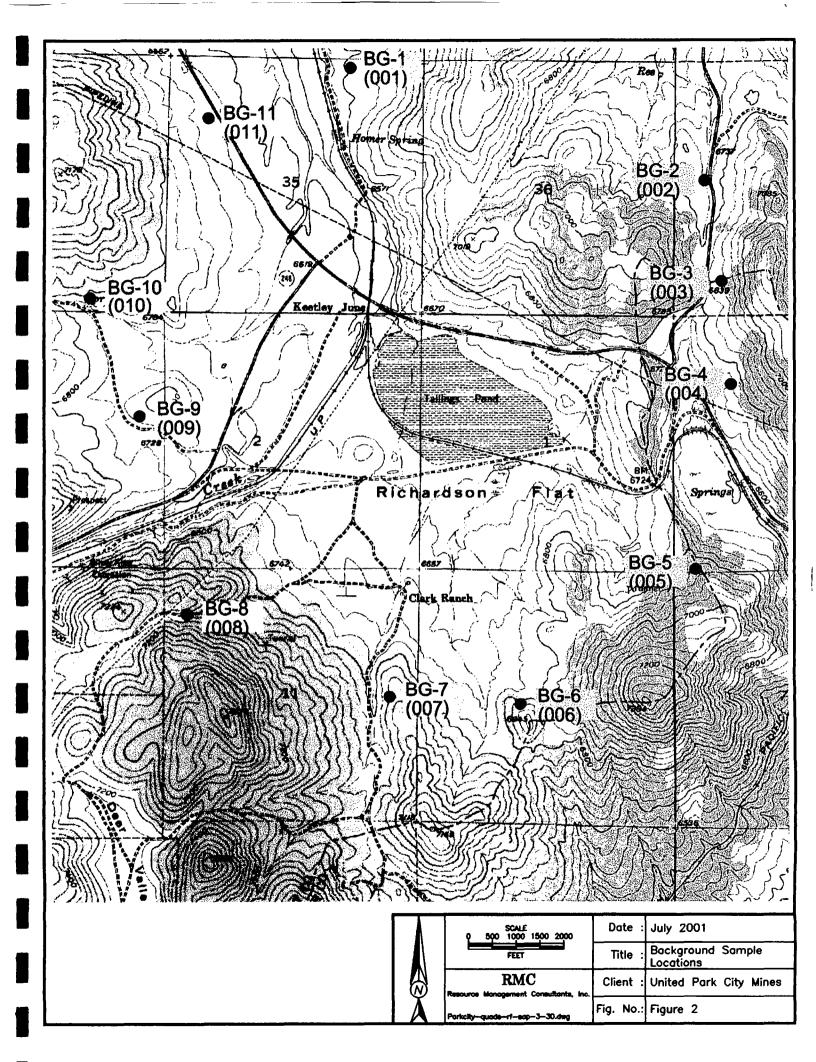
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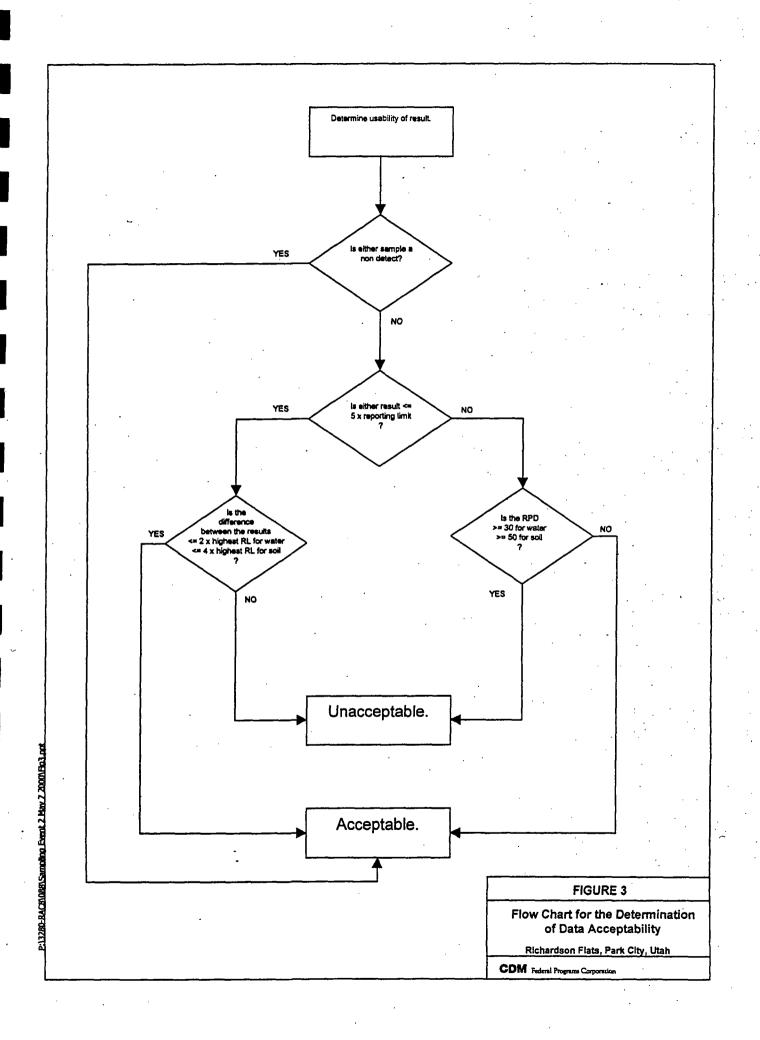
Color Map(s)

The following pages contain color that does not appear in the scanned images.

To view the actual images, please contact the Superfund Records Center at (303) 312-6473.







Tabbed Page: Appendix A

Appendix A

Data Validation Report:

Trace Metals

(Sb, As, Cd, Cr, Cu, Pb, Se, Ag, Zn)

Project:

Richardson Flats

May 2001 Sampling

Project Manager:

Jeff Montera

Site:

Richardson Flats

Sample Delivery Group (SDG):

K2103393 (U8-010079)

Contract Laboratory:

Columbia Analytical Services

Kelso, Washington

Reviewer:

Lisa Burnley, CDM Federal

Second Reviewer:

Amy Ballow, CDM Federal

Date Reviews Completed:

June 21, 2001

Matrix:

Soil

Data validation was performed following the guidelines in the Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (USEPA, February 1994).

All data are considered to be valid and acceptable including those analytes that have been qualified as estimated (J). All actions are detailed in the following report.

This report includes analytical results for eight soil samples (listed below) collected at the Richardson Flats Site during May 2001 and analyzed for trace metals as listed above by Columbia Analytical Services, Kelso, Washington.

Sample Numbers:

| 01-E2-ON-006-2 | 01-E2-OF-020-6 |
|----------------|----------------|
| 01-E2-ON-025-2 | 01-E2-OF-320-6 |
| 01-E2-OF-016-2 | 01-E2-OF-022-2 |
| 01-E2-OF-016-6 | 01-E2-OF-003-6 |

1. Holding Time and Sample Preservation

All holding times were met.

2. Instrument Calibration and Calibration Verification

The criteria for initial calibration verification (ICV) and continuing calibration verification (CCV) were within control limits.

3. Blank Contamination

The highest concentration of an analyte detected in a blank sample is used to determine an action level for purposes of data qualification. Blank contamination and actions are discussed below.

(A) Laboratory Blanks

Antimony was detected in the preparation blank at 0.07 mg/kg. The detected results for antimony in samples 01-E2-ON-006-2 and 01-E2-ON-025-2 were qualified as non-detected (U).

(B) Calibration Blanks

Calibration blank data met required criteria.

(C) Equipment Rinsate and Field Blanks

No equipment rinsate blanks or field blanks were analyzed with this job number.

4. Matrix Spike (MS) Analyses

The MS analyses were performed for all applicable analytes. The percent recovery (%R) for antimony at 35% was below validation QC limits of 75-125%. The results for antimony in all samples were qualified as estimated (J). All other percent recoveries were within QC limits in the MS analysis.

5. Laboratory Control Samples

The laboratory control samples were analyzed for all analytes and the results are within the required QC limits.

6. Laboratory Duplicate Sample Analyses

All calculable relative percent differences (RPDs) were less than or equal to validation limits of 35% or within the control limit of \pm 2*CRDL.

7. Field Duplicates

All field duplicate results were within acceptable control limits for sample duplicates 01-E2-OF-020-6/01-E2-OF-320-6.

8. Instrument Detection Limits

Instrument detection limits met the specified limits of this project.

9. Inductively Coupled Plasma Serial Dilution Analysis

Serial dilutions were performed for each matrix and results of the diluted sample analysis agreed within 10% of the original undiluted analysis except for zinc at 11% using Method 6020. All detected zinc results by Method 6020 were estimated (J) (i.e., in all samples). It should be noted that the laboratory did not flag the zinc results on the summary Form 1s with an "E" qualifier to indicate serial dilution problems.

10. System Performance and Overall Assessment

The data from the analysis of the listed samples are usable for their intended purpose including the results that were estimated (J/UJ).

I. INORGANIC ANALYSIS WORKSHEET -- HOLDING TIMES

BATCH: K210539 3

List all analytes which do not meet holding time criteria

| List all analytes which do not | meet noidi | | ia | | | | | | |
|--------------------------------|---------------|-------------------------------------|-------------------|-------------------------------|------------------------------|----------------------|--------------------|-------------------------------------|--------|
| Sample ID | Matrix | List Pre- servative (A, B, C) | Date Coilected | *Metals Analysis Date/s | *Hg CVAA Analysis Date | *CN Analysis Date | Analysis Date/s | No. of Days Past Holding Time | Action |
| AVEDWOLESON OCE | عـ 5 | B | 5/81 | 5/2430 1 | | | | 9 | me |
| 01-1-2-cw-025-2 | | | 5191 | 7 ' | | | | 7 | |
| 1 0F-016-1 | | | 5/9/ | | | | | | |
| 1 1 1 -6 | | | 5/91 | | | | | | |
| 7020-6 | | | 5/9 1 | | | | | | |
| -320-6 | | | 5/91 | | | | | | |
| 1-022-2 | | | 5/7.1 | | | | | | |
| 1-6-03-6 | \mathcal{L} | | 5/01 | | | | <u> </u> | | |
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| ctions: | | | | | | | | | |

- If holding times are exceeded, all sample results are estimated (J)/(UJ).
 If holding times are grossly exceeded (>=2*holding time), detected results are estimated (J), and non-detected results are rejected (R).

Preservatives:

- A. Preserved w/HNO3 and cooled to 4°C
- B. Cooled to 4°C
- C. No Preservative

Review By:

| ANALYTE | HOLDING TIME | PRESERVATIVE | |
|---------|--------------|--------------------------|----------|
| | | AQUEOUS | SOIL |
| Metals | 180 days | pH < 2 w/HNO3, 4 Deg. C | 4 Deg. C |
| Mercury | 28 days | pH < 2 w/HNO3, 4 Deg. C | 4 Deg. C |
| Cyanide | 14 days | pH > 12 w/NaOH, 4 Deg. C | 4 Deg. C |

Holding Time = Analysis Date - Collection Date

11A. INORGANIC ANALYSIS WORKSHEET -- ICP CALIBRATIONS

BATCH: K 2103393

List all ICP analytes that did not meet the percent recovery criteria for initial calibration verification (ICV) and continuing calibration verification (ICV).

| | CCV | TRUE | Found | % R | Action | Samples Affected |
|--|--------------|----------|-------------|----------|-------------|---------------------------------------|
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ICV/CCV Actions:

PERCENT RECOVERY

| | <75% | 75-89% | 90-110% | 111-125% | >125% |
|----------------------|------|--------|---------|----------|-------|
| Detected results | R | J | V | J | R |
| Non-detected Results | R | UJ | V | V | V |

III. INORGANIC ANALYSIS WORKSHEET -- BLANKS

| | MATRIX: | Su:] | | | | BATCH: <u>U 210239 3</u> |
|---------------------------------------|---------------------|----------------|--|-----------------|----------------|---------------------------------------|
| st the highest pos | sitive AND negation | ve blank resul | t >= DL below | . Use one work | sheet for soil | matrix and another for water matrix. |
| Analyte | CCB PB/MB | IDL | Blank Conc. | 5 * Bl. Conc. | Action | Samples Affected |
| 5b | PB | | 0.07/ | 0.35 | | 1,2 |
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| TE: Verify that t | he absolute value | e of any analy | te concentration | n in the PB or | MB is < CRDL | • |
| ify | | | | | | |
| e prep blank per | matrix | | | - | | |
| e prep blank per | batch | | | | ***** | |
| | diately after ICV | | | | | |
| B analyzed after | | | ······································ | | | · · · · · · · · · · · · · · · · · · · |
| | sate blanks analy | zed? If so, in | clude above if | applicable to p | roject. | · · · · · · · · · · · · · · · · · · · |
| MMENTS | | | | | - | |
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| ions: | | | | - | | |

- 1. If [Blank] < IDL, no action is taken.
- If Blank > = IDL, then all sample results > = IDL and < 5*Blank are non-detected (U).
 If Blank = < -IDL, all sample results > = IDL and < 5* |Blank| are estimated (J).
- 4. If Blank = < -IDL then all non-detected results are estimated (UJ).
- * If blank concentration > CRDL, all detected sample results < 5 *Blanks are rejected (R).
- * If blank concentration > CRDL, all detected sample results > 5 *Blanks and < 10* Blank are estimated (J).

IVA. INORGANIC ANALYSIS WORKSHEET -- ICP INTERFERENCE CHECK SAMPLE

| | | | | BATCH:_ | | |
|--|-----------------------|------------------------------|---|---------------------------------------|--|-------------------|
| NOTE: The sample result equal to the concentration | | | , if the sample conce | | Ca, Fe and Mg are less than o | or |
| Examine the sample res | ults in ug/L and list | t any Al, Ca, Fe or Mg | results that are grea | iter than the ICSA | \ values. | |
| Sample ID | Analyte | Sample Result | ICS Value | | Comments | |
| 110- | | | | | | _ |
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| List any analytes in the l | | | eria of 80-120% R. | | | |
| Analyte | % R | Action | | Samp | les Affected | |
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| CLP Protocol Only | | | | | | |
| | | ne beginning and end d No | of each sample analy | ysis run, or a min | imum of twice per 8-hour shif | t (whichever |
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| Actions: | | | | | | |
| | ŧ | PERCENT RECOV | /ERY | | | |
| | | <50% | 50-79% | 80-120% | >120% | |
| Detected results | | R | J | V | J | |
| Non-detected results | | R | UJ | V · | V | • |

BATCH: 12103393

V. INORGANIC ANALYSIS WORKSHEET -- PRE-DIGESTION MATRIX SPIKE

MATRIX:__<u>خي. 1</u>

| ample ID | Analyte | Spiked Sample Result | Sample Results | Spike Added | % R | Action | Samples Affected |
|--------------------------|-----------------|---------------------------------------|-------------------|----------------|-----------------|------------------|---------------------------------------|
| #1 | 55 | 40.9 | 0,37 | 117 | 35, | Thos | All 6020, |
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| rvas a pre re frequen | | No No | ATEN AT HIS LO | danea nedaeud | y or once eve | y zo samples, (| or every 3DG (willchever is |
| Nas a pos | st-digestion ma | atrix spike and | alyzed for all it | CP elements, e | cept Silver, it | at did not meet | the pre- |
| stion ma | rix spike recov | ery criteria? | Yes | No N | A | } | |
| | trix spike prep | ared for each | different sam | ple matrix? | Yes | / No | <u> </u> |
| MMENTS | | | | | | | |
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<u>Note</u>

Detected results

Non-detected Results

If analyte concentrations in the sample is greater than 4 times the amount spiked, then limits do not apply.

< 30%

J

R

PERCENT RECOVERY

75-125%

> 125%

30-74%

UJ

VI. INORGANIC ANALYSIS WORKSHEET -- LABORATORY DUPLICATES

| MATRIX: | 5a. | BATCH: | • |
|---------|-----|--------|---|
| | | | |

List all parameters that do not meet RPD or CRDL criteria

| ample ID | Analyte | Sample Result | Dup. Results | RPD | Difference ³ | Action | Samples Affected |
|-------------|---------------------------------------|------------------|--------------|-----|---------------------------------------|---------------------|------------------|
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1. AQUEOUS

If both sample values > 5*CRDL, estimate (J/UJ) all sample results of the same matrix if the RPD is > 20%.

If either sample value < 5°CRDL, and the difference between the duplicate and the original is > CRDL, estimate (J)/(UJ) all sample results of the same

If both sample value > 5°CRDL, estimate (J/UJ) all sample results of the same matrix if the RPP is > 35%.

If either sample value < 5°CRDL, and the difference between the duplicate and the original is > 2°CRDL estimate (J)/(UJ) all sample results of the

Difference = |Sample result - Duplicate sample result| Include outliers for field duplicates (if applicable)

A duplicate sample must be prepared for each sample matrix analyzed or per batch, whichever is more frequent.

VII. INORGANIC ANALYSIS WORKSHEET - LABORATORY CONTROL SAMPLES

| | | MATRIX: | i | | _ | BATCH: | 210-1395 | 3 |
|------------------|-----------------|--|---|----------------|--|--------------|--|---------------------------------------|
| | | | recovery criteria. | - | | Τ | | |
| LCS ID | Analyte | True Value | Found Value | % R | Action | <u> </u> | Samples Affecte | d |
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| Note: | | | | | | | | · · · · · · · · · · · · · · · · · · · |
| | me matrix as sa | imples must be p | repared for each | SDG. | | | | |
| COMMENTS | | | | | | | | · |
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| Actions: | | | P 4 A | -100: | | | • | |
| Exception: Antir | mony and silver | nave no control | limits. An aqueo | ius ECS is not | required for CN | and mercury. | | |
| | | | | PERCEN | T RECOVERY | | | |
| 1. AQUEOUS | | | <50% | 50-79% | 80-120% | >120% | | |
| Detected results | | | R R | nn 1 | V V | ^ 7 | | |
| Non-detected re | suits | • | K | . 03 | V | V | | |
| 2. SOLID LCS | | | | | | | • | |
| Recoveries stipu | lated by EMSL | | | | | | | • |
| | | | BELOW | | WITHIN |) | ABOVE | |
| | | | CONTROL LIMITS | 1 | CONTROL LIMITS | j | CONTROL LIMITS | |
| Detected results | i | | J | (| V | | J | |
| Non-detected re | | | ÚJ | | v | | V | |
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IX. INORGANIC ANALYSIS WORKSHEET -- ICP SERIAL DILUTION ANALYSIS

| | MATRIX: | 501) | | | | ВАТ | CH: K2103395 |
|-------------------|--------------------|------------------|-------------------|---------------------------|-------------------|---------------|---------------------------------------|
| Serial dilution o | riteria only appli | es if the origin | nai sample res | ult is at least 50* I | DL and %D | > 10%. | |
| Analyte | IDL | 50*IDL | Sample Results | Serial Dilution Result | % D | Action | Samples Affected |
| 22 | lars1.0 | 50 | 65.7 | 73.0, | () | 7 | A11 6020 |
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| | | | | | | | |
| INDUCTIVELY | COUPLED PLA | SMA SERIAI | DULITIONAN | IAI YSIS: | | | |
| | | | | of the diluted sam | ple analysis | agreed within | |
| | ne original undilu | | Yes | No_ | | | |
| | were not perform | ned for the for | lowing: | | | | |
| COMMENTS | | | - | | | | |
| | | | | | | | |
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| | · | | | <u>.</u> | | | |
| · | | -: | <u>-</u> | | | | |
| Actions: | | | | | | | |

NOTES

Estimate (J) detected results if %D is > 10%.

If results from diluted samples are higher than concentrated sample, matrix interference should be suspected and sample results may be biased low.

X. INORGANIC ANALYSIS WORKSHEET - SAMPLE RESULT VERIFICATION

BATCH: N -103353

| معولا | | | | | | | | | |
|---|--|---|--|--|------------------------------|---------------|---------------------|---------------|------------|
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| ······································ | | | | | | | | | |
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| | | · | | | | | | | |
| List results that fall outside | the linear rar | nge of the I | ICP instrume | nt or the calibrate | d range of the A | AA or Cya | nide instrume | nt, and | |
| re not reanalyzed. | | | | | . . | | | | |
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| | | | | | | - | | · | i |
| Were ICP linear ranges ob | tained within | 3 months | of and preced | ding, the sample : | analyses? | Yes | <u> </u> | lo | NA |
| | (SIUGO MILLIIO) | 2 111011015 | or, area proces | | | | | | |
| | tained within | | 7 Z | | | | | | |
| Were ICP interelement cor | rections obtai | ned within t, found to | 12 months o | f, and preceding, | RDL, and obtain | | Yes 3 months of, | No and . | NA |
| Were ICP interelement cor Were instrument detection eceding, the sample analyse | rections obtai limits presentes? | ned within t, found to Yes | 12 months o | of, and preceding, or equal to the Cl No | RDL, and obtain NA | | 3 months of, | | |
| Were ICP interelement cor Were instrument detection eceding, the sample analyse | rections obtai limits presentes? | ned within t, found to Yes | 12 months o | of, and preceding, or equal to the Cl No | RDL, and obtain | | <u> </u> | | NA NA |
| Were ICP interelement cor Were instrument detection eceding, the sample analyse Were all sample results rep | rections obtaining the limits presentes? | ned within t, found to Yes o the IDL if | 12 months of the less than frunning CLF | or equal to the Cl No Protocol? | RDL, and obtain NA | | 3 months of, | | |
| Were ICP interelement cor Were instrument detection eceding, the sample analyse Were all sample results rep | rections obtaining the limits presentes? | ned within t, found to Yes o the IDL if | 12 months of the less than frunning CLF | or equal to the Cl No Protocol? | RDL, and obtain NA Yes | | 3 months of, | | NĀ |
| Were ICP interelement cor Were instrument detection eceding, the sample analyse Were all sample results rep | limits presentes? | ned within t, found to Yes o the IDL if | 12 months of the less than frunning CLF | or equal to the Ci No protocol? | RDL, and obtain NA Yes | ed within | 3 months of, | | NĀ |
| Were ICP interelement cor Were instrument detection eceding, the sample analyse Were all sample results rep | limits presentes? | ned within t, found to Yes o the IDL if | 12 months of the less than frunning CLF | or equal to the Ci No protocol? | RDL, and obtain NA Yes | ed within | 3 months of, No | and | NĀ |
| Were ICP interelement cor Were instrument detection eceding, the sample analyse Were all sample results rep Were all sample results rep Were sample weights, volu | limits presentes? | ned within t, found to Yes o the IDL if | 12 months of the less than frunning CLF | or equal to the Ci No protocol? | RDL, and obtain NA Yes | ed within | 3 months of, No | and | NĀ |
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| Were ICP interelement cor Were instrument detection eceding, the sample analyse Were all sample results rep Were all sample results rep Were sample weights, volu | limits presentes? corted down to ported down to the same percent | ined within t, found to Yes o the IDL if o MDL if ru solids, and | 12 months of the less than frunning CLF unning SW-84 dilutions us | or equal to the CI No Protocol? 46 methods? sed correctly when | Yes Yes reporting the r | ed within | 3 months of, No | and | NĀ |
| Were ICP interelement cor Were instrument detection eceding, the sample analyse Were all sample results rep Were all sample results rep Were sample weights, volu | limits presentes? | ned within t, found to Yes o the IDL if o MDL if ru solids, and | be less than frunning CLF unning SW-84 d dilutions us | or equal to the Cinon Protocol? 46 methods? sed correctly when | Yes Yes reporting the r | ed within | 3 months of, No | and | NĀ |
| Were ICP interelement cor Were instrument detection eceding, the sample analyse Were all sample results rep Were all sample results rep Were sample weights, volu | limits presentes? corted down to ported down to the same percent | ned within t, found to Yes o the IDL if o MDL if ru solids, and | to the less than | or equal to the CINo Protocol? 46 methods? sed correctly where 5.64 (9) 12,7 (8) | Yes Yes reporting the r | ed within | 3 months of, No | and | NĀ |
| Were ICP interelement cor Were instrument detection eceding, the sample analyse Were all sample results rep Were all sample results rep Were sample weights, volu | limits presentes? | ned within t, found to Yes o the IDL if o MDL if ru solids, and | be less than frunning CLF unning SW-84 d dilutions us 9,25 19,3 19,0 16.6 | or equal to the Cf No Protocol? Ged correctly where S.61 (7) 17.7 (8) 13.4 (3) | Yes Yes reporting the r | ed within | 3 months of, No | and | NĀ |
| Were ICP interelement cor Were instrument detection eceding, the sample analyse Were all sample results rep Were all sample results rep Were sample weights, volu | rections obtain the services? corted down to the services of | ned within t, found to Yes o the IDL if o MDL if ru solids, and | to the less than | or equal to the Crino Protocol? 46 methods? sed correctly when 7,7 (\$ 13,1 (3) 14,5 (1) 16,5 (1) | Yes Yes reporting the r | esults? | 3 months of, No | and | NĀ |
| Were ICP interelement cor Were instrument detection eceding, the sample analyse Were all sample results rep Were all sample results rep Were sample weights, volu | limits presentes? corted down to corte | ned within t, found to Yes o the IDL if o MDL if ru solids, and solids, and solids, and solids, and | 12 months of trunning CLF unning SW-84 dilutions us 9,25 17,3 14,6 15,6 15,5 360 | st and preceding, or equal to the CI No Protocol? 46 methods? sed correctly where 5.67 (9 12.7 (8 13.4 (3 17.9 (1) 17.5 (9) 37.1 (5) | Yes Yes reporting the r | ed within | 3 months of, No | and | NĀ |
| Were ICP interelement cor Were instrument detection eceding, the sample analyse Were all sample results rep Were all sample results rep Were sample weights, volu | limits presentes? ported down to po | ned within t, found to Yes o the IDL if o MDL if ru solids, and | be less than frunning CLF unning SW-84 d dilutions us 9,25 17,3 19,0 16,6 48,5 360 200 | or equal to the CINo protocol? 46 methods? sed correctly when 17,7 (\$ 13,1 (3 14,9 (1) 16,5 (1) 20 (0 | Yes Yes reporting the r | esults? | 3 months of, No | and | NĀ |
| Were ICP interelement cor Were instrument detection eceding, the sample analyse Were all sample results rep Were all sample results rep Were sample weights, volu | limits presentes? corted down to corte | ned within t, found to Yes o the IDL if o MDL if ru solids, and solids, and solids, and solids, and | 12 months of trunning CLF unning SW-84 dilutions us 9,25 17,3 14,6 15,6 15,5 360 | st and preceding, or equal to the CI No Protocol? 46 methods? sed correctly where 5.67 (9 12.7 (8 13.4 (3 17.9 (1) 17.5 (9) 37.1 (5) | Yes Yes reporting the r | esults? | 3 months of, No | and | NĀ |

-1-

INORGANIC ANALYSIS DATA SHEET

Client:

Matrix:

U.S. Environmental Protection Agency

Service Request: K2103393

Project No.: U8-010079

SOIL

Date Collected: 05/08/01

Project Name: NA

Date Received: 05/14/01

Units: MG/KG

Basis: Dry

Sample Name: 01-E2-ON-006-2

Lab Code: K2103393-001

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | С | Ω |
|----------|--------------------|------|--------------------|-------------------|------------------|--------|---|---|
| Antimony | 6020 | 0.06 | 5 | 5/29/01 | 5/30/01 | 0.37 | | N |
| /Arsenic | 6020 | 0.6 | 5 | 5/23/01 | 5/29/01 | 1.6 | 1 | |
| Cadmium | 6020 | 0.06 | 5 | 5/23/01 | 5/29/01 | 0.19 | | |
| Chromium | 6020 | 0.2 | 5 | 5/23/01 | 5/29/01 | 13.3 | | |
| /Copper | 6020 | 0.1 | 5 | 5/23/01 | 5/29/01 | 9.9 | | |
| Lead | 6020 | 0.06 | . 5 | 5/23/01 | 5/29/01 | 14.8 | | |
| Selenium | 6020 | 1.2 | 5 | 5/23/01 | 5/29/01 | 1.2 | Ū | |
| Silver | 6020 | 0.02 | 5 | 5/29/01 | 5/30/01 | 0.21 | | |
| Zinc | 6020 | 0.6 | 5 | 5/23/01 | 5/29/01 | 38.5 | | |

% Solids:

Comments:

00021

ALISA SW-RAG

-1-

INORGANIC ANALYSIS DATA SHEET

Client:

U.S. Environmental Protection Agency

Service Request: K2103393

Project No.: U8-010079

Date Collected: 05/09/01

Project Name: NA

Date Received: 05/14/01

Matrix:

SOIL

Units: MG/KG

Basis: Dry

Sample Name: 01-E2-ON-025-2

Lab Code: K2103393-002

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | С | Ω |
|----------|--------------------|------|--------------------|-------------------|------------------|--------|---|----------|
| Antimony | 6020 | 0.06 | 5 | 5/29/01 | 5/30/01 | 0.24 | | N |
| Arsenic | 6020 | 0.6 | 5 | 5/23/01 | 5/29/01 | 3.1 | | |
| Cadmium | 6020 | 0.06 | 5 | 5/23/01 | 5/29/01 | 0.39 | | |
| Chromium | 6020 | 0.2 | 5 | 5/23/01 | 5/29/01 | 16.2 | | 1 |
| Copper | 6020 | 0.1 | 5 | 5/23/01 | 5/29/01 | 21.3 | | <u> </u> |
| Lead | 6020 | 0.06 | 5 | 5/23/01 | 5/29/01 | 16.4 | | |
| Selenium | 6020 | 1.2 | 5 | 5/23/01 | 5/29/01 | 1.2 | บ | |
| Silver | 6020 | 0.02 | . 5 | 5/29/01 | 5/30/01 | 0.21 | | |
| Zinc | 6020 | 0.6 | 5 | 5/23/01 | 5/29/01 | 62.4 | | |

% Solids:

Comments:

00022

inelly SW-846

-1-

INORGANIC ANALYSIS DATA SHEET

Client:

U.S. Environmental Protection Agency

Service Request: K2103393

Project No.: U8-010079

Date Collected: 05/09/01

Project Name: NA

Date Received: 05/14/01

Matrix:

SOIL

Units: MG/KG

Basis: Dry

Sample Name: 01-E2-OF-016-2

Lab Code: K2103393-003

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | С | Ω _. |
|----------|--------------------|------|--------------------|-------------------|------------------|--------|---|----------------|
| Antimony | 6020 | 0.06 | 5 | 5/29/01 | 5/30/01 | 0.89 | | И |
| Arsenic | 6020 | 0.6 | 5 | 5/23/01 | 5/29/01 | 6.1 | | |
| Cadmium | 6020 | 0.06 | 5 | 5/23/01 | 5/29/01 | 0.62 | | [· |
| Chromium | 6020 | 0.2 | . 5 | 5/23/01 | 5/29/01 | 17.7 | | |
| Copper | 6020 | 0.1 | 5 | 5/23/01 | 5/29/01 | 20.9 | | |
| Lead | 6020 | 0.06 | 5 | 5/23/01 | 5/29/01 | 62.8 | | |
| Selenium | 6020 | 1,2 | 5 | 5/23/01 | 5/29/01 | 1.2 | ט | |
| Silver | 6020 | 0.02 | 5 | 5/29/01 | 5/30/01 | 0.54 | | |
| Zinc | 6020 | 0.6 | 5 | 5/23/01 | 5/29/01 | 84.1 | | |

% Solids: 82.5

Comments:

00023

whild SW-846

-1-

INORGANIC ANALYSIS DATA SHEET

Client:

U.S. Environmental Protection Agency

Service Request: K2103393

Project No.: U8-010079

Date Collected: 05/09/01

Project Name: NA

Date Received:

05/14/01

SOIL

MG/KG Units:

Basis: Dry

Sample Name: 01-E2-OF-016-6

Lab Code: K2103393-004

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | С | Q |
|----------|--------------------|------|--------------------|-------------------|------------------|--------|---|----------|
| Antimony | 6020 | 0.06 | 5 | 5/29/01 | 5/30/01 | 0.63 | _ | N |
| Arsenia | 6020 | 0.6 | 5 | 5/23/01 | 5/29/01 | 5.5 | | |
| Cadmium | 6020 | 0.06 | 5 | 5/23/01 | 5/29/01 | 0.54 | | <u> </u> |
| Chromium | 6020 | 0.2 | 5 | 5/23/01 | 5/29/01 | 22.3 | | |
| Copper | 6020 | 0.1 | 5 | 5/23/01 | 5/29/01 | 22.8 | | |
| Lead | 6020 | 0.06 | 5 | 5/23/01 | 5/29/01 | 59.5 | | |
| Selenium | 6020 | 1.2 | 5 | 5/23/01 | 5/29/01 | 1.2 | Ū | |
| Silver | 6020 | 0.02 | 5 | 5/29/01 | 5/30/01 | 0.47 | | |
| Zinc | 6020 | 0.6 | 5 | 5/23/01 | 5/29/01 | 91.4 | | |

% Solids:

Comments:

00024

126/1/ SW-816

-1-

INORGANIC ANALYSIS DATA SHEET

Client:

U.S. Environmental Protection Agency

Service Request: K2103393

Project No.: U8-010079

Date Collected: 05/09/01

Project Name: NA

Date Received:

05/14/01

Dry

Matrix:

SOIL

MG/KG Units:

Basis:

Sample Name: 01-E2-OF-020-6

Lab Code: K2103393-005

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | С | Q |
|----------|--------------------|------|--------------------|-------------------|------------------|--------|---|---|
| Antimony | 6020 | 0.05 | 5 | 5/29/01 | 5/30/01 | 9.25 | | N |
| Arsenic | 6020 | 0.5 | 5 | 5/23/01 | 5/29/01 | 19.3 | Ī | |
| Cadmium | 6020 | 0.05 | 5 | 5/23/01 | 5/29/01 | 14.0 | | Γ |
| Chromium | 6020 | 0.2 | 5 | 5/23/01 | 5/29/01 | 16.6 | Γ | |
| Copper | 6020 | 0.1 | 5 | 5/23/01 | 5/29/01 | 48.5 | | |
| Lead | 6020 | 0.05 | 5 | 5/23/01 | 5/29/01 | 360 | | |
| Selenium | 6020 | 1.1 | 5 | 5/23/01 | 5/29/01 | 1.1 | Ū | |
| Silver | 6020 | 0.02 | 5 | 5/29/01 | 5/30/01 | 1.98 | | |
| Zinc | 6020 | 2.7 | 25 | 5/23/01 | 5/30/01 | 775 | | |

% Solids: 75.9

Comments:

00025

-1-

INORGANIC ANALYSIS DATA SHEET

U.S. Environmental Protection Agency

K2103393 Service Request:

Project No.: U8-010079

05/09/01 Date Collected:

Project Name: NA

Date Received: 05/14/01

Matrix:

SOIL

MG/KG Units:

Basis:

Dry

Sample Name: 01-E2-OF-320-6

Lab Code: K2103393-006

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | c | Q |
|----------|--------------------|------|--------------------|-------------------|------------------|--------|---|-----|
| Antimony | 6020 | 0.05 | 5 | 5/29/01 | 5/30/01 | 5.64 | _ | И |
| Arsenic | 6020 | 0.5 | 5 | 5/23/01 | 5/29/01 | 17.7 | | Π |
| Cadmium | 6020 | 0.05 | 5 | 5/23/01 | 5/29/01 | 13.6 | Γ | Γ |
| Chromium | 6020 | 0.2 | .5 | 5/23/01 | 5/29/01 | 14.9 | | |
| Copper | 6020 | 0.1 | 5 | 5/23/01 | 5/29/01 | 46.5 | | Ī |
| Lead | 6020 | 0.05 | 5 | 5/23/01 | 5/29/01 | 341 | | |
| Selenium | 6020 | 1.1 | 5 | 5/23/01 | 5/29/01 | 1.1 | Ū | |
| Silver | 6020 | 0.02 | 5 | 5/29/01 | 5/30/01 | 1.45 | | |
| Zinc | 6020 | 2.7 | 25 | 5/23/01 | 5/30/01 | 708 | | . : |

% Solids: 77.3

Comments:

00026

-1-

INORGANIC ANALYSIS DATA SHEET

Client:

U.S. Environmental Protection Agency

Service Request: K2103393

Project No.: U8-010079

Date Collected: 05/09/01

Project Name: NA

Date Received: 05/14/01

Matrix:

SOIL

Units: MG/KG

Basis: Dry

Sample Name: 01-E2-OF-022-2

Lab Code: K2103393-007

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | c | Q |
|----------|--------------------|------|--------------------|-------------------|------------------|--------|---|----------|
| Antimony | 6020 | 0.06 | 5 | 5/29/01 | 5/30/01 | 1.05 | | N |
| Arsenic | 6020 | 0.6 | 5 | 5/23/01 | 5/29/01 | 4.2 | | |
| Cadmium | 6020 | 0.06 | 5 | 5/23/01 | 5/29/01 | 0.66 | | Ι. |
| Chromium | 6020 | 0.2 | 5 | 5/23/01 | 5/29/01 | 17.6 | Γ | <u> </u> |
| Copper | 6020 | 0.1 | 5 | 5/23/01 | 5/29/01 | 25.8 | | 1 |
| Lead | 6020 | 0.06 | 5 | 5/23/01 | 5/29/01 | 32.2 | | T. |
| Selenium | 6020 | 1.2 | 5 | 5/23/01 | 5/29/01 | 1.2 | ט | · |
| Silver | 6020 | 0.02 | 5 | 5/29/01 | 5/30/01 | 0.52 | | |
| Zinc | 6020 | 0.6 | 5 | 5/23/01 | 5/29/01 | 98.3 | | |

% Solids:

Comments:

00027

CANLISA SW-846

-1-

INORGANIC ANALYSIS DATA SHEET

Client:

U.S. Environmental Protection Agency

Service Request: K2103393

Project No.: U8-010079

Date Collected:

05/10/01

Date Received: 05/14/01

Project Name: NA

Units: MG/KG

Dry

Basis:

Matrix:

SOIL

Sample Name: 01-E2-OF-003-6

Lab Code: K2103393-008

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | С | Q |
|----------|--------------------|------|--------------------|-------------------|------------------|--------|---|---|
| Antimony | 6020 | 0.06 | 5 | 5/29/01 | 5/30/01 | 0.45 | _ | И |
| Arsenic | 6020 | 0.6 | 5 | 5/23/01 | 5/29/01 | 4.0 | l | |
| Cadmium | 6020 | 0.06 | 5 | 5/23/01 | 5/29/01 | 0.40 | | |
| Chromium | 6020 | 0.2 | 5 | 5/23/01 | 5/29/01 | 19.9 | | |
| Copper | 6020 | 0.1 | 5 | 5/23/01 | 5/29/01 | 18.0 | | |
| Lead | 6020 | 0.06 | 5 | 5/23/01 | 5/29/01 | 30.8 | | |
| Selenium | 6020 | 1.1 | 5 | 5/23/01 | 5/29/01 | 1.1 | U | |
| Silver | 6020 | 0.02 | 5 | 5/29/01 | 5/30/01 | 0.34 | | |
| Zinc | 6020 | 0.6 | 5 | 5/23/01 | 5/29/01 | 79.3 | | |

% Solids:

Comments:

00028

Data Validation Report:

Trace Metals (As and Pb)

Project:

Richardson Flats

May 2001 Sampling

Project Manager:

Jeff Montera

Site:

Richardson Flats

Sample Delivery Group (SDG):

K2103392 (U8-010079)

Contract Laboratory:

Columbia Analytical Services

Kelso, Washington

Reviewer:

Lisa Burnley, CDM Federal

Second Reviewer:

Amy Ballow, CDM Federal

Date Reviews Completed:

June 21, 2001

Matrix:

Soil

Data validation was performed following the guidelines in the Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (USEPA, February 1994).

All data are considered to be valid and acceptable including those analytes that have been qualified as estimated (J). All actions are detailed in the following report.

This report includes analytical results for fourteen soil samples (listed below) collected at the Richardson Flats Site during May 2001 and analyzed for arsenic and lead metals as listed above by Columbia Analytical Services, Kelso, Washington.

Sample Numbers:

| 01-E2-ON-008-2 | 01-E2-OF-002-6 |
|----------------|----------------|
| U1-E2-ON-000-2 | 01-E2-OF-002-0 |
| 01-E2-ON-009-2 | 01-E2-OF-004-2 |
| 01-E2-ON-021-2 | 01-E2-OF-304-2 |
| 01-E2-OF-009-6 | 01-E2-OF-006-2 |
| 01-E2-OF-011-2 | 01-E2-RF-003-2 |
| 01-E2-OF-019-2 | 01-E2-RF-303-2 |
| 01-E2-OF-024-6 | 01-E2-RF-004-2 |

1. Holding Time and Sample Preservation

All holding times were met.

2. Instrument Calibration and Calibration Verification

The criteria for initial calibration verification (ICV) and continuing calibration verification (CCV) were within control limits.

3. Blank Contamination

The highest concentration of an analyte detected in a blank sample is used to determine an action level for purposes of data qualification. Blank contamination and actions are discussed below.

(A) Laboratory Blanks

None of the target analytes were detected in the method blanks associated with these samples.

(B) Calibration Blanks

Calibration blank data met required criteria.

(C) Equipment Rinsate and Field Blanks

No equipment rinsate blanks or field blanks were analyzed with this job number.

4. Matrix Spike (MS) Analyses

The MS analyses were performed for all applicable analytes. The percent recoveries (%Rs) for arsenic and lead were within the required QC limits.

5. Laboratory Control Samples

The laboratory control sample results for arsenic and lead were within the required QC limits.

6. Laboratory Duplicate Sample Analyses

All calculable relative percent differences (RPDs) were less than or equal to validation limits of 35% or within the control limit of \pm 2*CRDL.

7. Field Duplicates

All field duplicate results were within acceptable control limits for sample pairs 01-E2-OF-004-2/01-E2-OF-304-2 and 01-E2-RF-003-2/01-E2-RF-303-2.

8. Instrument Detection Limits

Instrument detection limits met the specified limits of this project.

9. Inductively Coupled Plasma Serial Dilution Analysis

Serial dilutions were performed for each matrix and results of the diluted sample analysis agreed within 10% of the original undiluted analysis.

10. System Performance and Overall Assessment

The data from the analysis of the listed samples are usable for their intended purpose.

I. INORGANIC ANALYSIS WORKSHEET - HOLDING TIMES

BATCH: 1/2103392

t ist all analytes which do not meet holding time criteria

| List all analytes which do not | meet holdii | ng time criter | ia | | | | | | |
|--------------------------------|-------------|-------------------------------------|-------------------|-------------------------------|------------------------------|---------------------------------------|--------------------|-------------------------------------|---------------------|
| Sample ID | Matrix | List Pre- servative (A, B, C) | Date Collected | *Metals Analysis Date/s | *Hg CVAA Analysis Date | *CN Analysis Date | Analysis Date/s | No. of Days Past Holding Time | Action |
| 01-62-02-008-2 | 5 / | 01 | 5/9/012 | 15/29/01 | | | _ | Ø 1 | s, e |
| 1-09-2 | | | 5/8/010 | -/ ' | | | | | |
| 1-0+1-2 | | | 3/9/01 | | | | | | |
| 0F-009-6 | | | | | | | | | |
| 1-011-2 | | | | | | · | | | |
| -019-2 | | | | | | | | | |
| -024-6 | | | 1 | | | | | | |
| -002-6 | | | 3/10/01 | | | | | <u> </u> | |
| -cn4-2 | | | , , , | | | | | | |
| -304-7 | | | | | | | | | |
| V-00K-1 | | | | | | | | <u> </u> | <u> </u> |
| / RF-005-d | | | | | | | | ļ | |
| 1-303-2 | | | | | | | | ļ | ··················· |
| V V-004-2 | <i>y</i> | | 1 | | | | | ļ | |
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| COMMENTS | | | | 20 | | | | | |
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Actions:

- If holding times are exceeded, all sample results are estimated (J)/(UJ).
 If holding times are grossly exceeded (>=2*holding time), detected results are estimated (J), and non-detected results are rejected (R).

Preservatives:

- A. Preserved w/HNO3 and cooled to 4°C
- B. Cooled to 4°C
- C. No Preservative

Date: Review By:

PRESERVATIVE ANALYTE HOLDING TIME AQUEOUS SOIL 180 days 4 Deg. C Metals pH < 2 w/HNO3, 4 Deg. C 28 days pH < 2 w/HNO3, 4 Deg. C 4 Deg. C Mercury 14 days pH > 12 w/NaOH, 4 Deg. C 4 Deg. C Cyanide

Holding Time = Analysis Date - Collection Date

IIA. INORGANIC ANALYSIS WORKSHEET -- ICP CALIBRATIONS

BATCH: K 2103392

| Analida | ICV | TRUE | Found | % R | Action | Samples Affected |
|-----------------|----------------|-----------------|-----------------|-------------|--------------|--|
| Analyte | CCV | IRUE | Found | 76 K | Action | Samples Affected |
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| nın after CRL e | very 10 sample | s and at end of | sequences (C | I P only) Y | 'es No | ······································ |
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| CCV Actions: | | | | | | |
| | | PER(<75% | CENT RECOVE | 90-110% |) 11-125% | >125% |
| | | | | | | |

III. INORGANIC ANALYSIS WORKSHEET -- BLANKS

| | MATRIX: | 50 | | | ı | BATCH: 103392 |
|--|-----------------|-----------------|---|------------------|------------------|---------------------------------------|
| ist the highest nosit | iva AND negat | ive black recut | >=IDI I below | l lee one work | sheet for soil : | matrix and another for water matrix. |
| Analyte | CCB | IDL | Blank Conc. | | Action | Samples Affected |
| · | PB/MB | | | | | |
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| OTE: Verify that the | e absolute valu | e of any analy | te concentration | n in the PB or I | VIB is < CRDL | - |
| erify | | | | | | |
| One prep blank per m | | | • | | | |
| One prep blank per b CB analyzed immedi | | | | | | |
| CB analyzed after e | | | | | | |
| Field/equipment/rinsa | | vzed? If so. in | clude above if | applicable to D | oiect. | |
| COMMENTS | | , | | -1. P | -, | - |
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| Actions: | | | | | | |

- 1. If |Blank| < IDL, no action is taken.
- 2. If Blank > = IDL, then all sample results > = IDL and < 5*Blank are non-detected (U).
- 3. If Blank = < -IDL, all sample results > = IDL and < 5* [Blank] are estimated (J).
- 4. If Blank = < -IDL then all non-detected results are estimated (UJ).
- * if blank concentration > CRDL, all detected sample results < 5 *Blanks are rejected (R).
- * If blank concentration > CRDL, all detected sample results > 5 *Blanks and < 10* Blank are estimated (J).

IVA INORGANIC ANALYSIS WORKSHEET -- ICP INTERERENCE CHECK SAMPLE

| | | | | BATCH: | |
|--|-------------------------------|---------------------------|-----------------------------|----------------------------------|---------------------------------------|
| | | | | ons of Al, Ca, Fe and Mg are les | s than or |
| equal to the concentration | on found in the ICS | SA solution. | . | | |
| Examine the sample res | sults in ug/L and lis | t any Al, Ca, Fe or Mg r | esults that are greater tha | an the ICSA values. | |
| Sample ID | Analyte . | Sample Result | ICS Value | Comments | |
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| ist any analytes in the | ICS AB solution th | at did not meet the crite | ria of 80-120% R. | | - |
| ist any analytes in the | ICS AB solution th | at did not meet the crite | ria of 80-120% R. | Samples Affected | |
| | | , | ria of 80-120% R. | Samples Affected | |
| | | , | ria of 80-120% R. | Samples Affected | |
| | | , | ria of 80-120% R. | Samples Affected | |
| | | , | ria of 80-120% R. | Samples Affected | |
| | | , | ria of 80-120% R. | | |
| | | , | ria of 80-120% R. | Samples Affected | |
| | | , | ria of 80-120% R. | | |
| | | , | ria of 80-120% R. | | |
| | | , | ria of 80-120% R. | | |
| | | , | ria of 80-120% R. | | |
| Analyte | | , | ria of 80-120% R. | | |
| CLP Protocol Only Vere Interference Chec | % R M.A k Samples run at ti | Action Action | | | our shift (whichever |
| CLP Protocol Only Vere Interference Checks more frequent)? | % R M.A k Samples run at ti | Action | | | our shift (whichever |
| CLP Protocol Only | % R M.A k Samples run at ti | Action Action | | | our shift (whichever |
| CLP Protocol Only Vere Interference Checks more frequent)? | % R M.A k Samples run at ti | Action Action | | n, or a minimum of twice per 8-h | our shift (whichever |
| CLP Protocol Only Vere Interference Checks more frequent)? | % R M.A k Samples run at ti | Action Action | | n, or a minimum of twice per 8-h | our shift (whichever |

50-79%

J

UJ

<50%

R

R

Detected results

Non-detected results

80-120%

>120%

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| V. | INORGANIC | ANALYSIS | WORKSHEET | PRE-DIGESTION MATRIX S | SPIKE |
|----|-----------|-----------------|-----------|--|-------|
|----|-----------|-----------------|-----------|--|-------|

| imple ID | Analyte | Spiked Sample Result | Sample Results | Spike Added | % R | Action | Samples Affected |
|----------|---|----------------------------|------------------------------|--|-----------------|-----------------|---------------------------------------|
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| | | rix spike prep | ared at the re | quired frequency | y of once eve | ry 20 samples, | or every SDG (whichever is |
| frequent | |) No | | <u> </u> | | | |
| | t-digest ion ∕ na rix spike recov | | llyzed for all-10 Yes | elements, ex | cept Silver, ti | nat did not mee | the pre- |
| | | | different sam | | Yes | No | |
| MENTS | | | | | | | |
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| • | yte does not n | neet the % R | criteria, qualif | y all associated | samples usin | g the following | criteria: |
| ons: | | | | EBOCKT PEGG | WEDO. | | • |
| | | | < 30% | ERCENT RECO 30-74% | 75-125% | > 125% | |
| | | | ~ JU /0 | JU-1 4 /0 | 10-12070 | - 140/0 | |
| | Detected resu | its | . j | J | (v / | J | • |

<u>Note</u>

VI. INORGANIC ANALYSIS WORKSHEET -- LABORATORY DUPLICATES

BATCH: U 2103371

| | | MA | ۲RIX: <u>ح</u> | <u>:/</u> | | BAT | CH: 12103377 |
|-----------------|-----------------|--|----------------|--------------|-------------------------|----------------|---------------------------------------|
| List all parame | ters that do no | t meet RPD or (| CRDL criteria. | | | | |
| Sample ID | Analyte | Sample Result | Dup. Results | RPD | Difference ³ | Action | Samples Affected |
| Cc | tera, | me- | | | | | |
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| COMMENTS | | | . "***** | <u> </u> | | | |
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| Actions: | | | | | ···· | - | |

1. AQUEOUS

If both sample values > 5°CRDL, estimate (J/UJ) all sample results of the same matrix if the RPD is > 20%.

If either sample value < 5°CRDL, and the difference between the duplicate and the original is > CRDL, estimate (J)/(UJ) all sample results of the same

2. SOLID

If both sample value > 5°CRDL, estimate (J/UJ) all sample results of the same matrix if the RPD is > 35%.

If either sample value < 5°CRDL, and the difference between the duplicate and the original is > 2°CRDL, estimate (J)/(UJ) all sample results of the

Difference = [Sample result - Duplicate sample result] Include outliers for field duplicates (if applicable)

Note

A duplicate sample must be prepared for each sample matrix analyzed or per batch, whichever is more frequent.

VII. INORGANIC ANALYSIS WORKSHEET -- LABORATORY CONTROL SAMPLES

| | | MATRIX: | 50:1 | | | BATCH: <u>//</u> | 2105392 | |
|-----------------------------------|--|--|-------------------|---------------------------------------|--|------------------|--|--|
| List all paramete | ers that do not n | neet the percent | recovery criteria | · | · · · · · · · · · · · · · · · · · · · | | | ···· |
| LCS ID | Analyte | True Value | Found Value | % R | Action | | Samples Affected | |
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| Note: | | <u> </u> | | | | | · | |
| LCS with the sar | ne matrix as sa | mples must be p | repared for each | SDG. | | | | |
| COMMENTS | | | | | | <u> </u> | | |
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| Actions: | | | | <u>-</u> | | - | · · · · · · · · · · · · · · · · · · · | ·-·-······ |
| Exception: Antin | nony and silver | have no control | limits. An aqueo | us LCS is not | required for CN a | nd mercury. | | |
| • | | | | BEBCEN | T RECOVERY | • | | |
| 1. AQUEOUS | | | <50% | 50-79% | 80-120% | >120% | • | |
| Detected results | | - | R | J | V | J | | • |
| Non-detected res | uits | • | R | บา | V | V | | • • |
| 2. SOLID LCS | | | | | _ | | | |
| Recoveries stipu | iated by EMSL | | | | | | | |
| • | • | | BELOW | | WITHIN |) | ABOVE | |
| | | | CONTROL | | CONTROL | / | CONTROL | |
| Detected | | | LIMITS | | LIMITS | , | LIMITS | |
| Detected results Non-detected res | | | nn 1 | | V | | Λ 1 | |
| | | | | | - | | - | |

IX. INORGANIC ANALYSIS WORKSHEET -- ICP SERIAL DILUTION ANALYSIS

| | MATRIX: | 50.1 | | | | BATCH | 1. N 2103972 |
|---------------------------------------|--|-------------------|---------------------------------------|-------------------------------|--|---------------|--|
| Serial dilution | criteria only annli | es if the origin: | al cample recu | It is at least 50* IC | N and %D > | 10% | • |
| Analyte | IDL | 50*IDL | Sample Results | Serial Dilution Result | % D | Action | Samples Affected |
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| | COUPLED PLA | | | ALYSIS: f the diluted samp | ole analysis a | greed within | |
| ten percent of t | he original undik | ited analysis. | Yes | No No | | | |
| | were not perform | ned for the folio | owing: | · | | | |
| COMMENTS | | | · | | | | |
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Actions:

Estimate (J) detected results if %D is > 10%.

NOTES

If results from diluted samples are higher than concentrated sample, matrix interference should be suspected and sample results may be biased low.

X. INORGANIC ANALYSIS WORKSHEET - SAMPLE RESULT VERIFICATION

| BATCH: | | | _ |
|-------------------------------|--------------|-----|---|
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| oriotion or calculation error | logibility o | t a | |

| Describe any raw data anomalies (i.e., baseline shifts, negative absorbances, transcription or calculation errors, legibility, etc. List results that fall outside the linear range of the ICP instrument or the calibrated range of the AA or Cyanide instrument, and vere not reanalyzed. Were ICP linear ranges obtained within 3 months of, and preceding, the sample analyses? Yes No NA Were ICP interelement corrections obtained within 12 months of, and preceding, the sample analyses? Yes No NA Were instrument detection limits present, found to be less than or equal to the CRDL, and obtained within 3 months of, and receding, the sample analyses? Yes No NA Were all sample results reported down to the IDL if running CLP protocol? Yes No NA Were all sample results reported down to MDL if running SW-846 methods? Yes No NA Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No NA COMMENTS Page 19 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 |
|--|
| List results that fall outside the linear range of the ICP instrument or the calibrated range of the AA or Cyanide instrument, and vere not reanalyzed. Were ICP linear ranges obtained within 3 months of, and preceding, the sample analyses? Yes No NA Were ICP interelement corrections obtained within 12 months of, and preceding, the sample analyses? Yes No NA Were instrument detection limits present, found to be less than or equal to the CRDL, and obtained within 3 months of, and receding, the sample analyses? Yes No NA Were all sample results reported down to the IDL if running CLP protocol? Yes No NA Were all sample results reported down to MOL if running SW-846 methods? Yes No NA Were sample weights, volumes, percent solids, and dillutions used correctly when reporting the results? Yes No COMMENTS COMMENTS |
| Were ICP linear ranges obtained within 3 months of, and preceding, the sample analyses? Yes No NA Were ICP interelement corrections obtained within 12 months of, and preceding, the sample analyses? Yes No NA Were instrument detection limits present, found to be less than or equal to the CRDL, and obtained within 3 months of, and receding, the sample analyses? Yes No NA Were all sample results reported down to the IDL if running CLP protocol? Yes No NA Were all sample results reported down to MDL if running SW-846 methods? Yes No NA Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No COMMENTS Page 45 25 25 25 25 25 25 25 25 25 25 25 25 25 |
| Were ICP linear ranges obtained within 3 months of, and preceding, the sample analyses? Yes No NA Were ICP interelement corrections obtained within 12 months of, and preceding, the sample analyses? Yes No NA Were instrument detection limits present, found to be less than or equal to the CRDL, and obtained within 3 months of, and receding, the sample analyses? Yes No NA Were all sample results reported down to the IDL if running CLP protocol? Yes No NA Were all sample results reported down to MDL if running SW-846 methods? Yes No NA Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No COMMENTS Page 45 25 25 25 25 25 25 25 25 25 25 25 25 25 |
| Were ICP linear ranges obtained within 3 months of, and preceding, the sample analyses? Yes No NA Were ICP interelement corrections obtained within 12 months of, and preceding, the sample analyses? Yes No NA Were instrument detection limits present, found to be less than or equal to the CRDL, and obtained within 3 months of, and receding, the sample analyses? Yes No NA Were all sample results reported down to the IDL if running CLP protocol? Yes No NA Were all sample results reported down to MDL if running SW-846 methods? Yes No NA Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No COMMENTS Page 45 25 25 25 25 25 25 25 25 25 25 25 25 25 |
| Were ICP linear ranges obtained within 3 months of, and preceding, the sample analyses? Yes No NA Were ICP interelement corrections obtained within 12 months of, and preceding, the sample analyses? Yes No NA Were instrument detection limits present, found to be less than or equal to the CRDL, and obtained within 3 months of, and receding, the sample analyses? Yes No NA Were all sample results reported down to the IDL if running CLP protocol? Yes No NA Were all sample results reported down to MDL if running SW-846 methods? Yes No NA Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No COMMENTS Page 45 25 25 25 25 25 25 25 25 25 25 25 25 25 |
| Were ICP linear ranges obtained within 3 months of, and preceding, the sample analyses? Yes No NA Were ICP interelement corrections obtained within 12 months of, and preceding, the sample analyses? Yes No NA Were instrument detection limits present, found to be less than or equal to the CRDL, and obtained within 3 months of, and receding, the sample analyses? Yes No NA Were all sample results reported down to the IDL if running CLP protocol? Yes No NA Were all sample results reported down to MDL if running SW-846 methods? Yes No NA Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No COMMENTS Page 45 25 25 25 25 25 25 25 25 25 25 25 25 25 |
| Were ICP linear ranges obtained within 3 months of, and preceding, the sample analyses? Yes No NA Were ICP interelement corrections obtained within 12 months of, and preceding, the sample analyses? Yes No NA Were instrument detection limits present, found to be less than or equal to the CRDL, and obtained within 3 months of, and receding, the sample analyses? Yes No NA Were all sample results reported down to the IDL if running CLP protocol? Yes No NA Were all sample results reported down to MDL if running SW-846 methods? Yes No NA Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No COMMENTS Page 45 25 25 25 25 25 25 25 25 25 25 25 25 25 |
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| Were ICP linear ranges obtained within 3 months of, and preceding, the sample analyses? Yes No NA Were ICP interelement corrections obtained within 12 months of, and preceding, the sample analyses? Yes No NA Were instrument detection limits present, found to be less than or equal to the CRDL, and obtained within 3 months of, and receding, the sample analyses? Yes No NA Were all sample results reported down to the IDL if running CLP protocol? Yes No NA Were all sample results reported down to MDL if running SW-846 methods? Yes No NA Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No COMMENTS Page 45 25 25 25 25 25 25 25 25 25 25 25 25 25 |
| Were ICP linear ranges obtained within 3 months of, and preceding, the sample analyses? Yes No NA Were ICP interelement corrections obtained within 12 months of, and preceding, the sample analyses? Yes No NA Were instrument detection limits present, found to be less than or equal to the CRDL, and obtained within 3 months of, and receding, the sample analyses? Yes No NA Were all sample results reported down to the IDL if running CLP protocol? Yes No NA Were all sample results reported down to MDL if running SW-846 methods? Yes No NA Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No COMMENTS Page 45 25 25 25 25 25 25 25 25 25 25 25 25 25 |
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| Were all sample results reported down to MDL if running SW-846 methods? Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No No NO NA COMMENTS OC 4 - 2 5.7 \$2.3 |
| . Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No COMMENTS OCY - 2 5.7 \$2.3 |
| . Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No COMMENTS OCY - 2 5.7 \$2.3 |
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INORGANIC ANALYSIS DATA SHEET

Client:

U.S. Environmental Protection Agency

Service Request: K2103392

Project No.: U8-010079

Date Collected: 05/09/01

Project Name: NA

Date Received: 05/14/01

Matrix:

SOIL

Units: MG/KG

Basis: Dry

Sample Name: 01-E2-ON-008-2

Lab Code: K2103392-001

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | c | Q. |
|---------|--------------------|------|--------------------|-------------------|------------------|--------|---|----|
| Arsenic | 6020 | 0.5 | 5 | 5/24/01 | 5/29/01 | 2.8 | | |
| Lead | 6020 | 0.05 | 5 | 5/24/01. | 5/29/01 | 19.0 | | |

% Solids: 76.8

Comments:

NS 6 41 U11020

-1-

INORGANIC ANALYSIS DATA SHEET

Client:

Matrix:

U.S. Environmental Protection Agency

Service Request: K2103392

Project No.: U8-010079

Date Collected: 05/08/01

Date Received: 05/14/01

Project Name: NA

Units: MG/KG

SOIL

Basis: Dry

Sample Name: 01-E2-ON-009-2

Lab Code: K2103392-002

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | С | Q |
|---------|--------------------|------|--------------------|-------------------|------------------|--------|---|---|
| Arsenic | 6020 | 0.5 | 5 | 5/24/01 | 5/29/01 | 10.8 | | |
| Lead | 6020 | 0.05 | 5 | 5/24/01 | 5/29/01 | 24.0 | | |

% Solids: 93.9

Comments:

W6/14 N U11021

-1-

INORGANIC ANALYSIS DATA SHEET

Client:

U.S. Environmental Protection Agency

Service Request: K2103392

Project No.: U8-010079

Date Collected: 05/09/01

Project Name: NA

Date Received: 05/14/01

Matrix:

SOIL

Units: MG/KG

Basis: Dry

Sample Name: 01-E2-ON-021-2

Lab Code: K2103392-003

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | С | Q |
|---------|--------------------|------|--------------------|-------------------|------------------|--------|---|---|
| Arsenic | 6020 | 0.6 | 5 | 5/24/01 | 5/29/01 | 9.8 | | |
| Lead | 6020 | 0.06 | 5 | 5/24/01 | 5/29/01 | 148 | | |

% Solids: 85.3

Comments:

-1-

INORGANIC ANALYSIS DATA SHEET

Client:

U.S. Environmental Protection Agency

Service Request: K2103392

Project No.: U8-010079

Date Collected: 05/09/01

Project Name: NA

Date Received: 05/14/01

Matrix:

SOIL

Units: MG/KG

Basis: Dry

Sample Name: 01-E2-OF-009-6

Lab Code: K2103392-004

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | С | Q |
|---------|--------------------|------|--------------------|-------------------|------------------|--------|---|---|
| Arsenic | 6020 | 0.6 | 5 | 5/24/01 | 5/29/01 | 11.3 | | |
| Lead | 6020 | 0.06 | 5 | 5/24/01 | 5/29/01 | 136 | | |

% Solids: 83.0

Comments:

in6 41 00023

-1-

INORGANIC ANALYSIS DATA SHEET

Client:

U.S. Environmental Protection Agency

Service Request: K2103392

Project No.: U8-010079

Sample Name: 01-E2-OF-011-2

Date Collected: 05/09/01

Project Name: NA

Date Received: 05/14/01

Matrix:

Units: MG/KG

Basis: Dry

SOIL

Lab Code: K2103392-005

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | C | Ω |
|---------|--------------------|------|--------------------|-------------------|------------------|--------|---|---|
| Arsenic | 6020 | 0.5 | 5 | 5/24/01 | 5/29/01 | 76.3 | | |
| Lead | 6020 | 1.10 | 100 | 5/24/01 | 5/29/01 | 2140 | | |

% Solids: 76.0

Comments:

(134 NU1024

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INORGANIC ANALYSIS DATA SHEET

Client:

U.S. Environmental Protection Agency

Service Request: K2103392

Project No.: U8-010079

Date Collected: 05/09/01

Project Name: NA

Date Received: 05/14/01

Matrix:

SOIL

Units: MG/KG

Basis: Dry

Sample Name: 01-E2-OF-019-2

Lab Code: K2103392-006

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | С | Q |
|---------|--------------------|------|--------------------|-------------------|------------------|--------|---|---|
| Arsenic | 6020 | 0.6 | 5 | 5/24/01 | 5/29/01 | 6.3 | | |
| Lead | 6020 | 0.06 | 5 | 5/24/01 | 5/29/01 | 58.3 | | |

% Solids: 88.7

Comments:

-1-

INORGANIC ANALYSIS DATA SHEET

U.S. Environmental Protection Agency

Service Request: K2103392

Project No.: U8-010079

Date Collected: 05/09/01

Project Name: NA

Date Received: 05/14/01

Matrix:

SOIL

Units: MG/KG

Basis: Dry

Sample Name: 01-E2-OF-024-6

Lab Code: K2103392-007

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | С | Q |
|---------|--------------------|------|--------------------|-------------------|------------------|--------|---|---|
| Arsenic | 6020 | 0.6 | 5 | 5/24/01 | 5/29/01 | 3.1 | | |
| Lead | 6020 | 0.06 | 5 | 5/24/01 | 5/29/01 | 17.2 | | |

% Solids: 82.0

Comments:

W 1 011026

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INORGANIC ANALYSIS DATA SHEET

Client:

U.S. Environmental Protection Agency

Service Request: K2103392

Project No.: U8-010079 Date Collected: 05/10/01

Project Name: NA

Date Received: 05/14/01

Units: MG/KG

Basis: Dry

Matrix: SOIL

Sample Name: 01-E2-OF-002-6

Lab Code: K2103392-008

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | С | Q |
|---------|--------------------|------|--------------------|-------------------|------------------|--------|---|---|
| Arsenic | 6020 | 0.6 | 5 | 5/24/01 | 5/29/01 | 5.6 | | · |
| Lead | 6020 | 0.06 | 5 | 5/24/01 | 5/29/01 | 69.0 | 1 | |

% Solids: 89.6

Comments:

1010 U11027

-1-

INORGANIC ANALYSIS DATA SHEET

Client:

U.S. Environmental Protection Agency

Service Request: K2103392

Project No.: U8-010079

Sample Name: 01-E2-OF-004-2

Date Collected: 05/10/01

Project Name: NA

Date Received: 05/14/01

Matrix:

SOIL

Units: MG/KG

Basis: Dry

Lab Code: K2103392-009

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | С | Q |
|---------|--------------------|------|--------------------|-------------------|------------------|--------|---|---|
| Arsenic | 6020 | 0.6 | 5 | 5/24/01 | 5/29/01 | 5.7 | | |
| Lead | 6020 | 0.06 | 5 | 5/24/01 | 5/29/01 | 82.3 | | |

% Solids: 84.0

Comments:

-1-

INORGANIC ANALYSIS DATA SHEET

Client:

U.S. Environmental Protection Agency

Service Request: K2103392

Project No.: U8-010079

Sample Name: 01-E2-OF-304-2

Date Collected: 05/10/01

Project Name: NA

Date Received: 05/14/01

Matrix:

SOIL

Units: MG/KG

Basis: Dry

Lab Code: K2103392-010

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | C . | Q |
|---------|--------------------|------|--------------------|-------------------|------------------|--------|-----|---|
| Arsenic | 6020 | 0.6 | 5 | 5/24/01 | 5/29/01 | 4.4 | | |
| Lead | 6020 | 0.06 | 5 | 5/24/01 | 5/29/01 | 62.8 | | |

% Solids: 86.7

Comments:

-1-

INORGANIC ANALYSIS DATA SHEET

Client:

U.S. Environmental Protection Agency

Service Request: K2103392

Project No.: U8-010079

Date Collected: 05/10/01

Project Name: NA

Date Received: 05/14/01

Matrix:

SOIL

Units: MG/KG

Basis: Dry

Sample Name: 01-E2-OF-006-2

Lab Code: K2103392-011

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | С | Q |
|---------|--------------------|------|--------------------|-------------------|------------------|--------|---|---|
| Arsenic | 6020 | 0.6 | 5 | 5/24/01 | 5/29/01 | 5.7 | | |
| Lead | 6020 | 0.06 | 5 | 5/24/01 | 5/29/01 | 28.9 | | |

% Solids: 88.7

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INORGANIC ANALYSIS DATA SHEET

Client:

U.S. Environmental Protection Agency

Service Request: K2103392

Project No.: U8-010079

Date Collected: 05/10/01

Project Name: NA

Date Received: 05/14/01

Matrix:

SOIL

Units: MG/KG

Basis: Dry

Sample Name: 01-E2-RF-003-2

Lab Code: K2103392-012

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | С | Q |
|---------|--------------------|------|--------------------|-------------------|------------------|--------|---|---|
| Arsenic | 6020 | 0.6 | 5 | 5/24/01 | 5/29/01 | 6.4 | | |
| Lead | 6020 | 0.06 | 5 | 5/24/01 | 5/29/01 | 24.5 | | |

% Solids: 84.9

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INORGANIC ANALYSIS DATA SHEET

U.S. Environmental Protection Agency

Service Request: R2103392

Project No.: U8-010079

Date Collected: 05/10/01

Project Name: NA

Date Received: 05/14/01

Matrix:

SOIL

Units: MG/KG

Basis: Dry

Sample Name: 01-E2-RF-303-2

Lab Code: K2103392-013

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | С | Q |
|---------|--------------------|------|--------------------|-------------------|------------------|--------|---|---|
| Arsenic | 6020 | 0.6 | 5 | 5/24/01 | 5/29/01 | 6.2 | | |
| Lead | 6020 | 0.06 | 5 | 5/24/01 | 5/29/01 | 22.3 | | |

% Solids: 85.4

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INORGANIC ANALYSIS DATA SHEET

Client:

U.S. Environmental Protection Agency

Service Request: K2103392

Project No.: U8-010079

Date Collected: 05/10/01

Project Name: NA

Date Received: 05/14/01

Matrix:

SOIL

Units: MG/KG

Basis: Dry

Sample Name: 01-E2-RF-004-2

Lab Code: K2103392-014

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | C | Ω |
|---------|--------------------|------|--------------------|-------------------|------------------|--------|---|---|
| Arsenic | 6020 | 0.6 | . 5 | 5/24/01 | 5/29/01 | 4.4 | | |
| Lead | 6020 | 0.06 | 5 | 5/24/01 | 5/29/01 | 26.4 | | : |

% Solids: 83.8

Data Validation Report:

Trace Metals

(Al, Sb, As, Cd, Cr, Cu, Fe, Pb, Se, Ag, Zn)

Project:

Richardson Flats May 2001 Sampling

Project Manager:

Jeff Montera

Site:

. Richardson Flats

Sample Delivery Group (SDG):

K2103391 (U8-010079)

Contract Laboratory:

Columbia Analytical Services

Kelso, Washington

Reviewer:

Lisa Burnley, CDM Federal

Second Reviewer:

Amy Ballow, CDM Federal

Date Reviews Completed:

June 21, 2001

Matrix:

Soil

Data validation was performed following the guidelines in the Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (USEPA, February 1994).

All data are considered to be valid and acceptable including those analytes that have been qualified as estimated (J). All actions are detailed in the following report.

This report includes analytical results for eight soil samples (listed below) collected at the Richardson Flats Site during May 2001 and analyzed for trace metals as listed above by Columbia Analytical Services, Kelso, Washington.

Sample Numbers:

| 01-E2-ON-008-7 | 01-E2-TA-002-4 |
|-----------------|----------------|
| 01-E2-ON-019-18 | 01-E2-TA-003-1 |
| 01-E2-TA-001-3 | 01-E2-SD-001-6 |
| 01-E2-TA-301-3 | 01-E2-SD-301-6 |

1. Holding Time and Sample Preservation

All holding times were met.

2. Instrument Calibration and Calibration Verification

The criteria for initial calibration verification (ICV) and continuing calibration verification (CCV) were within control limits.

3. Blank Contamination

The highest concentration of an analyte detected in a blank sample is used to determine an action level for purposes of data qualification. Blank contamination and actions are discussed below.

(A) Laboratory Blanks

Antimony was detected in the preparation blank at 0.07 mg/kg. The detected results for antimony in samples 01-E2-ON-008-7 and 01-E2-ON-019-18 were qualified as non-detected (U).

(B) Calibration Blanks

Calibration blank data met required criteria.

(C) Equipment Rinsate and Field Blanks

No equipment rinsate blanks or field blanks were analyzed with this job number.

4. Matrix Spike (MS) Analyses

The MS analyses were performed for all applicable analytes. The percent recovery (%R) for antimony at 34% was below validation QC limits of 75-125%. The results for antimony in all samples were qualified as estimated (J/UJ). All other percent recoveries were within QC limits in the MS analysis.

5. Laboratory Control Samples

The laboratory control samples were analyzed for all analytes and the results are within the required QC limits.

6. Laboratory Duplicate Sample Analyses

All calculable relative percent differences (RPDs) were less than or equal to validation limits of 35% or within the control limit of ± 2 *CRDL.

7. Field Duplicates

Field duplicate analyses were performed on 01-E2-TA-001-3/01-E2-TA-301-3 and 01-E2-SD-001-6/01-E2-SD-301-6. The RPD for selenium at 200% in samples 01-E2-TA-001-3/01-E2-TA-301-3 and the RPD for cadmium at 51% in samples 01-E2-SD-001-6/01-E2-SD-301-6 were outside control limits. No qualification is taken on field duplicate results.

8. Instrument Detection Limits

Instrument detection limits met the specified limits of this project.

9. Inductively Coupled Plasma Serial Dilution Analysis

Serial dilutions were performed for each matrix and results of the diluted sample analysis agreed within 10% of the original undiluted analysis except for zinc at 11% using Method 6020. All detected zinc results by Method 6020 were estimated (J) (i.e., in samples 01-E2-ON-008-7 and 01-E2-ON-019-18). It should be noted that the laboratory did not flag the zinc results on the summary Form 1s with an "E" qualifier to indicate serial dilution problems.

10. System Performance and Overall Assessment

The data from the analysis of the listed samples are usable for their intended purpose including the results that were estimated (J/UJ).

I. INORGANIC ANALYSIS WORKSHEET -- HOLDING TIMES

BATCH: K2103391

| List all analytes which do not | meet holdi | ng time critei | na | | | | | | |
|---|--------------|-------------------------------------|-------------------|-------------------------------|------------------------------|----------------------|--------------------|-------------------------------------|-------------|
| Sample ID | Matrix | List Pre- servative (A, B, C) | Date Collected | *Metals Analysis Date/s | *Hg CVAA Analysis Date | *CN Analysis Date | Analysis Date/s | No. of Days Past Holding Time | Action |
| 01-62-00-008-7 | Sil | B | 5/8/c/ | 5/24,30/04 | | | | Ø | we |
| 1 1-01418 | | | 1 | , , , | | | | | |
| -TA-001-3 | | | 3/1/010 | | | | | | |
| 1-301-3 | | | | | | | | , | |
| -002-4 | | | • | | | | | | |
| 1-003-1 | | | • | | | | | | |
| -50-001-6 | | | י וטוילכ | | | | | | |
| 11-301-6 | | ./ | V - | | | | | | |
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| | | | | J | | | | | |
| COMMENTS Revis | 5/14 | | 60 | 10 7 G | 020 | TOTAL | met | 1.5 | |
| | | | | | | | | | |
| | | | | | | | | · · · · | |
| A1,5 | 5b, 4s, | C), (1) | (U,Fe, | Pb, Se, | 17.2 | | · | | |
| ctions: If holding times are exceeded, a | | | • | , , | <i>J</i> / | | | | |
| If holding times are grossly exce | earripre res | olding time), d | etected results | are | | | • | | |

Preservatives:

A. Preserved w/HNO3 and cooled to 4°C

B. Cooled to 4°C

C. No Preservative

Review By: Any BALLON 06-20 01

| ANALYTE | HOLDING TIME | PRESERVATIVE | |
|---------|--------------|--------------------------|-------------|
| | | AQUEOUS | SOIL |
| Metals | 180 days | pH < 2 w/HNO3, 4 Deg. C | 4 Deg. C |
| Mercury | 28 days | pH < 2 w/HNO3, 4 Deg. C | 4 Deg. C |
| Cyanide | 14 days | pH > 12 w/NaOH, 4 Deg. C | 4 Deg. C |
| <u></u> | | | |

Holding Time = Analysis Date - Collection Date

IIA. INORGANIC ANALYSIS WORKSHEET -- ICP CALIBRATIONS

| BATCH:_ | K2 | 1053 | 9 | <i></i> |
|---------|----|------|---|---------|
|---------|----|------|---|---------|

List all ICP analytes that did not meet the percent recovery criteria for initial calibration verification (ICV) and continuing calibration verification (CCV).

| Analyte | ICV | TRUE | Found | % R | Action | Samples Affected |
|------------------|---|-----------------|---------------|-----------|------------------|---------------------------------------|
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| V run after CRI, | every 10 sample | s and at end of | sequences (Cl | P only) Y | es No | |
| | sample (CRI) an | | | | h sample pan (Cl | P only)? Yes No |
| MMENTS | | | | | | |
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ICV/CCV Actions:

| | PER | CENT RECO | | | |
|----------------------|------|-----------|---------|------------|-------|
| | <75% | 75-89% | 90-110% | 111-125% | >125% |
| Detected results | R | J | / v | <i>)</i>) | R |
| Non-detected Results | R | UJ | | V | V |

III. INORGANIC ANALYSIS WORKSHEET -- BLANKS

| | MATRIX:_ | 50. | | | | BATCH: | 12103391 |
|---------------------|--|--|-------------------|-------------------|----------------|--|---|
| st the highest ons | itive AND nega | itive hlank resi | ılt >=iDi i helow | lise one work | sheet for soil | matrix and anoth | er for water matrix, |
| Analyte | ICB CCB PB/MB | IDL | Blank Conc. | 1 | - Action | The division of the division o | Samples Affected |
| 56 | PB | 0.10 05/1 | 0.07 7 | 20.55 | U. | 4 A A AM | #1, #2-/ |
| | | | | | | - V K | |
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| TE: Verify that the | ne absolute val | ue of any analy | vte concentration | n in the PB or N | 1B is < CRDL | • | |
| tify | | · | | | | | |
| e prep blank per | matrix | | | | | | |
| e prep blank per | | | | | | | |
| 3 analyzed immed | | , | | | | | |
| B analyzed after | | | | | | | |
| ld/equipment/rins | | lyzed? If so, is | nclude above if | applicable to pro | oject. | | |
| MMENTS | | | | | | | · |
| | | | | , | | | ` ~_~;~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ |
| tions: | | | | | | | |

- 1. If |Blank| < IDL, no action is taken.
- 2. If Blank $> \approx$ IDL, then all sample results > = IDL and < 5°Blank are non-detected (U).
- 3. If Blank = < -IDL, all sample results > = IDL and < 5" |Blank| are estimated (J).
- 4. If Blank = < -IDL then all non-detected results are estimated (UJ).
- * If blank concentration > CRDL, all detected sample results < 5 *Blanks are rejected (R).
- * If blank concentration > CRDL, all detected sample results > 5 *Blanks and < 10* Blank are estimated (J).

IVA. INORGANIC ANALYSIS WORKSHEET -- ICP INTERFERENCE CHECK SAMPLE

BATCH: K2103591

NOTE: The sample results can be accepted without qualification, if the sample concentrations of AI, Ca, Fe and Mg are less than or equal to the concentration found in the ICSA solution.

Examine the sample results in ug/L and list any Al, Ca, Fe or Mg results that are greater than the ICSA values.

Sample ID Analyte Sample Result ICS Value Comments

Analyte Sample Result ICS Value Comments

List any analytes in the ICS AB solution that did not meet the criteria of 80-120% R.

Analyte % R Action Samples Affected

CLP Protocol Only
Were Interference Check Samples run at the beginning and end of each sample analysis run, or a minimum of twice per 8-hour shift (whichever is more frequent)? Yes No

COMMENTS

PERCENT RECOVERY

Actions:

| | <50% | 50-79% | 80-120% | >1209 |
|----------------------|------|--------|---------|-------|
| Detected results | R | J | V | J |
| Non-detected results | R | UJ | V | V |

V. INORGANIC ANALYSIS WORKSHEET -- PRE-DIGESTION MATRIX SPIKE

| a, Al and Fe the sample r | for soil samp | les, and Ca, i s the spike ac Spiked Sample | Mg, K and Na | ery criteria. Not for water samp or of 4 or more, | les. | | recovery criteria are not evaluated for Ca, Mg |
|------------------------------|--|--|---------------------------------|---|-----------------|-----------------|--|
| a, Al and Fe the sample r | for soil samp result exceeds Analyte | les, and Ca, i s the spike ac Spiked Sample | Mg, K and Na ided by a facto | for water samp | les. | | reservery entend are not evaluated for Oa, mig |
| the sample re | esult exceeds Analyte | s the spike ac Spiked Sample | ided by a facto | | | ıken | |
| | | Sample | Sample | [| | | |
| <i>y</i> 1 | 56 1 | Result | Results | Spike Added | % R | Action | Samples Affected |
| | | 37,5 | 0,31 | 110 | 3470 | 7/05 | All |
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| las a ara d | licentian mate | iv enika oran | ared at the rev | Duired fraguenc | v of once ever | 20 samples | l , or every SDG (whichever is |
| ras a pre-u frequent)? | | y ahiya bish | ared at the rec | tauen uedaeur | y or once ever | y zo samples | , or every 303 (whichever is |
| | | trix spike ana | lyzed for all IC | CP elements, ex | cept Silver, th | at did not me | et the pre- |
| | x spike recov | | Yes | No N | | Ste se | cs/ |
| las a matri: | ix spike prepa | red for each | different samp | ole matrix? | Yes | No | |
| MENTS | | | | | | | |
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| any analyt | te does not m | eet the % R | criteria, qualify | y all associated | samples using | ; the following | g criteria: |
| J113. | | | | ERCENT RECC | N/FRY | | • |
| | | | < 30% | 30-74% | 75-125% | > 125% | |
| | | | | | V | J | |
| ים | etected result | .3 | j | J | V | | |

VI. INORGANIC ANALYSIS WORKSHEET -- LABORATORY DUPLICATES

N2103391

BATCH:

501

MATRIX:

| Contern mad | ample ID | Analyte | Sample Result | Dup. Results | RPD | Difference ³ | Action | Samples Affected |
|-------------|----------|---------------------------------------|------------------|---------------|-------------|-------------------------|---------------|---------------------------------------|
| | | | 100 / | | | | | · · · · · · · · · · · · · · · · · · · |
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| | 3: | | | | | | | |

1 AQUEQUS

If both sample values > 5*CRDL, estimate (J/UJ) all sample results of the same matrix if the RPD is > 20%.

If either sample value < 5*CRDL, and the difference between the duplicate and the original is > CRDL, estimate (J)/(UJ) all sample results of the same

2. SOLID

If both sample value > 5°CRDL, estimate (J/UJ) all sample results of the same matrix if the RPD is > 35%.

If either sample value < 5°CRDL, and the difference between the duplicate and the original is > 2°CRDL, estimate (J)/(UJ) all sample results of the

Difference = [Sample result - Duplicate sample result]

Include outliers for field duplicates (if applicable)

Note

A duplicate sample must be prepared for each sample matrix analyzed or per batch, whichever is more frequent.

VII. INORGANIC ANALYSIS WORKSHEET -- LABORATORY CONTROL SAMPLES

| List all paramet | ters that do not m | MATRIX: | | | - . | BATCH: Ka | 4105391 | |
|-----------------------------|--------------------|-----------------|---------------------------------------|------------------|------------------|---------------------------------------|--|-------------|
| LCS ID | Analyte | True Value | Found Value | % R | Action | | Samples Affected | |
| | | | | | | | | |
| | Crite | m N | 10/1- | | | | | |
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| Note: | <u> </u> | | | | | | | |
| | me matrix as sar | nples must be p | repared for each | SDG. | | · | | |
| COMMENTS | | | | | | | | |
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| Actions: | | | U | | | | | |
| exception: Anti | mony and silver | nave no control | ilmits. An aqued | ous LCS is not i | equired for CN a | and mercury. | | |
| | | | | | RECOVERY | | | |
| 1. AQUEOUS Detected results | | | <50% R | 50-79% J | 80-120% V | >120% J | | |
| Non-detected re | | - | R | υJ | V | v | | |
| | | | | | ~ | | | |
| 2. SOLID LCS | ulated by EMSL | | | | | | | |
| remagnes subi | mated by ENISE | | BELOW | | WITHIN | | ABOVE | |
| | | | CONTROL | / | CONTROL |) | CONTROL | |
| Detected results | | | LIMITS J | (| LIMITS | | LIMITS J | |
| Non-detected re | | | กา | | V | | v | |

Pag∈ 15

IX. INORGANIC ANALYSIS WORKSHEET - ICP SERIAL DILUTION ANALYSIS Follows: ...

| Color Signal Dilution Analysis: OUCTIVELY COUPLED PLASMA SERIAL DILUTION ANALYSIS: ial dilutions were performed for each matrix and results of the dilute percent of the original undiluted analysis. Yes | ılt 76 D | Action Samples Affected | |
|--|---------------------------------------|-------------------------|--------------|
| CTIVELY COUPLED PLASMA SERIAL DILUTION ANALYSIS: Idilutions were performed for each matrix and results of the dilute ercent of the original undiluted analysis. Yes | + : | | |
| ICTIVELY COUPLED PLASMA SERIAL DILUTION ANALYSIS: I dilutions were performed for each matrix and results of the dilute ercent of the original undiluted analysis. Yes | | | |
| ICTIVELY COUPLED PLASMA SERIAL DILUTION ANALYSIS: Il dilutions were performed for each matrix and results of the dilute ercent of the original undiluted analysis. Yes | | | |
| ICTIVELY COUPLED PLASMA SERIAL DILUTION ANALYSIS: I dilutions were performed for each matrix and results of the dilute ercent of the original undiluted analysis. Yes |) 11 | J 4116020 | |
| CTIVELY COUPLED PLASMA SERIAL DILUTION ANALYSIS: I dilutions were performed for each matrix and results of the dilute ercent of the original undiluted analysis. Yes | | (Leb 0.2) + "E | " |
| dilutions were performed for each matrix and results of the dilute ercent of the original undiluted analysis. | | Frank | |
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| dilutions were performed for each matrix and results of the dilute recent of the original undiluted analysis. | | | |
| ercent of the original undiluted analysis. | | | |
| di di constanti di constanti di contra di cont | ed sample analysis No | agreed within | |
| dilutions were not performed for the following: | | | |
| MENTS | · · · · · · · · · · · · · · · · · · · | | |
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Actions:

Estimate (J) detected results if %D is > 10%.

MATRIX:_

NOTES

If results from diluted samples are higher than concentrated sample, matrix interference should be suspected and sample results may be biased low.

X. INORGANIC ANALYSIS WORKSHEET -- SAMPLE RESULT VERIFICATION

| Colony! |
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| Describe any raw data anomalies (i.e., baseline shifts, negative absorbances, transcription or calculation errors, legibility, etc. List results that fall outside the linear range of the ICP instrument or the calibrated range of the AA or Cyanide instrument, and ere not reanalyzed. Were ICP linear ranges obtained within 3 months of, and preceding, the sample analyses? Yes No No Inc. In the Inc. In | |
|--|--------------|
| List results that fall outside the linear range of the ICP instrument or the calibrated range of the AA or Cyanide instrument, and re not reanalyzed. Were ICP linear ranges obtained within 3 months of, and preceding, the sample analyses? Yes No No Notice of the CP interelement corrections obtained within 12 months of, and preceding, the sample analyses? Yes No No Notice of the CPDL, and obtained within 3 months of, and preceding, the sample analyses? Yes No No Notice of the CPDL, and obtained within 3 months of, and preceding, the sample analyses? No No Notice of the CPDL, and obtained within 3 months of, and preceding, the sample analyses? No No Notice of the CPDL, and obtained within 3 months of, and preceding, the sample results reported down to the IDL if running CLP protocol? Yes No No Were all sample results reported down to the IDL if running SW-846 methods? Yes No No Were all sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No | |
| List results that fall outside the linear range of the ICP instrument or the calibrated range of the AA or Cyanide instrument, and re not reanalyzed. Were ICP linear ranges obtained within 3 months of, and preceding, the sample analyses? Yes No No Not Not Not Not Not Not Not Not N | |
| Were ICP linear ranges obtained within 3 months of, and preceding, the sample analyses? Were ICP linear ranges obtained within 3 months of, and preceding, the sample analyses? Were ICP interelement corrections obtained within 12 months of, and preceding, the sample analyses? Were ICP interelement corrections obtained within 12 months of, and preceding, the sample analyses? Were instrument detection limits present, found to be less than or equal to the CRDL, and obtained within 3 months of, and ceding, the sample analyses? Yes No NA Were all sample results reported down to the IDL if running CLP protocol? Were all sample results reported down to the IDL if running SW-846 methods? Yes No Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No MMENTS 600 Gozo 3 Y FB 15 6010 6030 A1 1560 1650 GOZO 3 49 3010 A1 1560 1650 A1 15 | |
| Nere ICP linear ranges obtained within 3 months of, and preceding, the sample analyses? No Notation of the sample analyses? No No No No No No No No No N | |
| Nere ICP linear ranges obtained within 3 months of, and preceding, the sample analyses? Were ICP linear ranges obtained within 3 months of, and preceding, the sample analyses? Were ICP interelement corrections obtained within 12 months of, and preceding, the sample analyses? Were ICP interelement corrections obtained within 12 months of, and preceding, the sample analyses? Were instrument detection limits present, found to be less than or equal to the CRDL, and obtained within 3 months of, and ceding, the sample analyses? Yes No NA Were all sample results reported down to the IDL if running CLP protocol? Were all sample results reported down to the IDL if running SW-846 methods? Yes No No Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No No MMENTS 600 Goza 3 Y Fb 6010 Goza 3 Y Fb 6010 Goza 41 Fig. 1950 Goza 3 Y Fc As 55 9.18 (0.91.71) Fc As 56 9.18 (0.91.71) Fc As 57 9.18 (0.91.71) | |
| Nere ICP linear ranges obtained within 3 months of, and preceding, the sample analyses? No NJ | |
| Vere ICP linear ranges obtained within 3 months of, and preceding, the sample analyses? Vere ICP linear ranges obtained within 3 months of, and preceding, the sample analyses? Vere ICP interelement corrections obtained within 12 months of, and preceding, the sample analyses? Vere instrument detection limits present, found to be less than or equal to the CRDL, and obtained within 3 months of, and eding, the sample analyses? Vere all sample results reported down to the IDL if running CLP protocol? Vere all sample results reported down to MDL if running SW-846 methods? Vere sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No No MENTS 600 Gozo Y 155 Al 1540 (1886) Color Gozo Y Al 155 Al 1540 (1886) Color Gozo Y Al 155 Al 1540 (1886) Color Gozo Y Al 155 Al 1540 (1886) Color Gozo Color G | |
| Nere ICP linear ranges obtained within 3 months of, and preceding, the sample analyses? Were ICP linear ranges obtained within 3 months of, and preceding, the sample analyses? Were ICP interelement corrections obtained within 12 months of, and preceding, the sample analyses? No Not To Journal Were instrument detection limits present, found to be less than or equal to the CRDL, and obtained within 3 months of, and exeding, the sample analyses? No NA Were all sample results reported down to the IDL if running CLP protocol? Yes No No Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No No Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No No Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No No Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No No Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No No Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No | |
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| Were ICP interelement corrections obtained within 12 months of, and preceding, the sample analyses? Yes No Were instrument detection limits present, found to be less than or equal to the CRDL, and obtained within 3 months of, and ceding, the sample analyses? Yes No Were all sample results reported down to the IDL if running CLP protocol? Were all sample results reported down to MDL if running SW-846 methods? Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No MMENTS Yes No No Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No Yes No Yes No No Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No Yes No No Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No Yes No Yes No No Yes No No Yes No No Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No Yes No Yes No No Yes No No Yes No No Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No Yes No No No No Yes No No No No No Yes No No No No No Yes No | |
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| Were ICP interelement corrections obtained within 12 months of, and preceding, the sample analyses? Yes No No To Journal Were instrument detection limits present, found to be less than or equal to the CRDL, and obtained within 3 months of, and ceding, the sample analyses? Yes No NA Were all sample results reported down to the IDL if running CLP protocol? Yes No Were all sample results reported down to MDL if running SW-846 methods? Yes No Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No MMENTS 6010 6020 Y AI Y Sh AI IS10 1450 1650 171 1750 1750 1750 1750 1750 1750 175 | |
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| Were ICP interelement corrections obtained within 12 months of, and preceding, the sample analyses? Yes No No To Journal Were instrument detection limits present, found to be less than or equal to the CRDL, and obtained within 3 months of, and ceding, the sample analyses? Yes No NA Were all sample results reported down to the IDL if running CLP protocol? Yes No Were all sample results reported down to MDL if running SW-846 methods? Yes No Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No MMENTS 6010 6020 Y AI Y Sh AI IS10 1450 1650 171 1750 1750 1750 1750 1750 1750 175 | |
| Were ICP interelement corrections obtained within 12 months of, and preceding, the sample analyses? Yes No Were instrument detection limits present, found to be less than or equal to the CRDL, and obtained within 3 months of, and ceding, the sample analyses? Yes No Were all sample results reported down to the IDL if running CLP protocol? Yes No Were all sample results reported down to MDL if running SW-846 methods? Yes No Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No MMENTS 6020 YAI Sh AI ISO 1950 (17) Can Go 10/6020 YES AI 150 1950 (17) Ph CO I A 249 2011 (17) | NA |
| Nere instrument detection limits present, found to be less than or equal to the CRDL, and obtained within 3 months of, and ceding, the sample analyses? 1/2 Yes No NA No NA Nere all sample results reported down to the IDL if running CLP protocol? No N | |
| Were all sample results reported down to the IDL if running CLP protocol? Were all sample results reported down to MDL if running SW-846 methods? Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No MMENTS Location Correctly All Sto 1950 (1950) All Sto 1950 (1950) The Colotto Story of St | NA |
| Were all sample results reported down to the IDL if running CLP protocol? Were all sample results reported down to MDL if running SW-846 methods? Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No No Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No No MMENTS 6010 6020 Y Al 1540 (450) CJ A) 249 (0.9(7) | |
| Were all sample results reported down to the IDL if running CLP protocol? Were all sample results reported down to MDL if running SW-846 methods? Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No No MMENTS 6010 6020 7 7 10 6010 6020 7 1 7 7 1 7 1 7 1 7 1 7 1 7 1 7 1 7 1 | } |
| Were all sample results reported down to MDL if running SW-846 methods? Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No No MMENTS 6010 6020 7 A1 7 B A1 1940 1940 161 4 C A5 7 B 214 2011 151 | |
| Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? MMENTS 600 600 6020 7 8 8 8 8 8 8 8 8 8 8 8 8 | NA |
| Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? MMENTS 600 600 6020 7 7 7 7 7 7 7 7 7 7 7 7 7 | |
| MMENTS PB 6010 6020 VAI V56 AI 1940 1950 16 CL. 6010 6020 VFE VAS SB 918 10.9(17) PB VCJ PS 249 2011 18 | NA |
| MMENTS 6010 6020 90 90 90 90 90 90 90 90 90 | |
| 16 6010 6020 / A1 /55 A1 1540 1450 (G) 4 6010/6020 / Fe /As 56 908 (0.9(17) 4 / Pb / CJ B, 249 2011 18 | |
| 16 6010 6020 / A1 /55 A1 1540 1450 (G) 4 6010/6020 / Fe /As 56 908 (0.9(17) 4 / Pb / CJ B, 249 2011 18 | |
| 16 6010/6020 / A1 /55 A1 1540 1450 (G) 4 6010/6020 / Fe /A5 56 9,18 (0.5/17) 4 / Pb / CJ PD 244 2011/18 | עער ע |
| pb /CJ A, 249 2011 18 | 1370 518 |
| | 77 69 |
| 17) (1) 100 malent | -42,115 |
| 1 200 200 (31) | 45,7 7 P |
| 6010 Cr 5.8 4,31351 | 7 10 |
| 103 Pb C 749 279 (12) | 117 18 |
| | 278 |
| 1 Sh 2650 3650 3650 3650 3650 3650 3650 3650 3 | <i>⊶m</i> 1€ |
| | |
| 2 - 10 638 7 2 - 10160 438 5 | 5,4 7. |

-1-

INORGANIC ANALYSIS DATA SHEET

Client:

U.S. Environmental Protection Agency

Service Request: K2103391

Project No.: U8-010079

Sample Name: 01-E2-ON-008-7

Date Collected: 05/08/01

Project Name: NA

Date Received: 05/14/01

Matrix:

SOIL

Units: MG/KG

Basis: Dry

Lab Code: K2103391-001

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | c | Q |
|----------|--------------------|------|--------------------|-------------------|------------------|--------|----|---|
| Aluminum | 6010B | 11.0 | · 2 | 5/29/01 | 5/30/01 | 21600 | 1 | 1 |
| Antimony | 6020 | 0.05 | 5 | 5/29/01 | 5/30/01 | 0.31 | Π | N |
| Arsenic | 6020 | 0.5 | 5 | 5/23/01 | 5/29/01 | 2.6 | Γ. | |
| Cadmium | 6020 | 0.05 | 5 | 5/23/01 | 5/29/01 | 0.55 | | · |
| Chromium | 6020 | 0.2 | 5 | 5/23/01 | 5/29/01 | 15.1 | | |
| Copper | 6020 | 0.1 | 5 | 5/23/01 | 5/29/01 | 24.4 | | |
| Iron | 6010B | 4.4 | 2 | 5/29/01 | 5/30/01 | 20300 | Γ | |
| Lead | 6020 | 0.05 | 5 | 5/23/01 | 5/29/01 | 17.6 | | |
| Selenium | 6020 | 1.1 | 5 | 5/23/01 | 5/29/01 | 1.1 | מ | |
| Silver | 6020 | 0.02 | 5 | 5/29/01 | 5/30/01 | 0.30 | | |
| Zinc | 6020 | 0.5 | 5 | 5/23/01 | 5/29/01 | 64.0 | | |

% Solids: 76.0

Comments:

00020

-1-

INORGANIC ANALYSIS DATA SHEET

Client:

U.S. Environmental Protection Agency

Service Request: K2103391

Project No.: U8-010079

Date Collected: 05/08/01

Project Name: NA

Date Received: 05/14/01

Matrix:

SOIL

Units: MG/KG

Basis: Dry

Sample Name: 01-E2-ON-019-18

Lab Code: K2103391-002

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | c. | Q |
|----------|--------------------|------|--------------------|-------------------|------------------|--------|--|----|
| Aluminum | 6010B | 12.2 | 2 | 5/29/01 | 5/30/01 | 15100 | | |
| Antimony | 6020 | 0.06 | 5 | 5/29/01 | 5/30/01 | 0.46 | Γ | N |
| Arsenic | 6020 | 0.6 | 5 | 5/23/01 | 5/29/01 | 4.0 | Γ | Γ |
| Cadmium | 6020 | 0.06 | 5 | 5/23/01 | 5/29/01 | 0.45 | | |
| Chromium | 6020 | 0.2 | 5 | 5/23/01 | 5/29/01 | 13.3 | | Ι. |
| Copper | 6020 | 0.1 | 5 | 5/23/01 | 5/29/01 | 15.8 | | |
| Iron | 6010B | 4.9 | 2 | 5/29/01 | 5/30/01 | 17100 | | Γ. |
| Lead | 6020 | 0.06 | 5 | 5/23/01 | 5/29/01 | 35.1 | | |
| Selenium | 6020 | 1.2 | 5 | 5/23/01 | 5/29/01 | 1.2 | ט | 1. |
| Silver | 6020 | 0.02 | 5 | 5/29/01 | 5/30/01 | 0.31 | | |
| Zinc | 6020 | 0.6 | 5 | 5/23/01 | 5/29/01 | 72.1 | | |

% Solids: 81.7

-1-

INORGANIC ANALYSIS DATA SHEET

Client:

U.S. Environmental Protection Agency

Service Request: K2103391

Project No.:

U8-010079

Date Collected: 05/09/01

Project Name: NA

Date Received: 05/14/01

Matrix:

SOIL

Units: MG/KG

Basis: Dry

Sample Name: 01-E2-TA-001-3

Lab Code: K2103391-003

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | С | Ω |
|----------|--------------------|------|--------------------|-------------------|------------------|--------|---|---|
| Aluminum | 6010B | 11.2 | 2 | 5/29/01 | 5/30/01 | 1540 | | |
| Antimony | 6020 | 0.06 | 5 | 5/29/01 | 5/30/01 | 9.18 | | N |
| Arsenic | 6020 | 0.6 | 5 | 5/23/01 | 5/29/01 | 249 | Π | |
| Cadmium | 6020 | 0.06 | 5 | 5/23/01 | 5/29/01 | 28.8 | | |
| Chromium | 6020 | 0.2 | 5 | 5/23/01 | 5/29/01 | 5.8 | | |
| Copper | 6020 | 0.1 | 5 | 5/23/01 | 5/29/01 | 349 | | |
| Iron | 6010B | 4.5 | 2 | 5/29/01 | 5/30/01 | 62200 | | |
| Lead | 6010B | 22.4 | 2 | 5/29/01 | 5/30/01 | 3650 | | |
| Selenium | 6020 | 1.1 | 5 | 5/23/01 | 5/29/01 | 1,2 | | |
| Silver | 6020 | 0.02 | 5 | 5/29/01 | 5/30/01 | 7.10 | | |
| Zinc | 6010B | 2.2 | 2 | 5/29/01 | 5/30/01 | 4760 | | |

% Solids: 74.3

Comments:

00022

-1-

INORGANIC ANALYSIS DATA SHEET

U.S. Environmental Protection Agency

Service Request: K2103391

Project No.: U8-010079

Date Collected: 05/09/01

Project Name: NA

Date Received: 05/14/01

Matrix:

SOIL

Units: MG/KG

Basis: Dry

Sample Name: 01-E2-TA-301-3

Lab Code: K2103391-004

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | c | Q |
|----------|--------------------|------|--------------------|-------------------|------------------|--------|---|---|
| Aluminum | 6010B | 12.5 | 2 | 5/29/01 | 5/30/01 | 1450 | | |
| Antimony | 6020 | 0.06 | 5 | 5/29/01 | 5/30/01 | 10.9 | | N |
| Arsenic | 6020 | 0.6 | 5 | 5/23/01 | 5/29/01 | 201 | | |
| Cadmium | 6020 | 0.06 | 5 | 5/23/01 | 5/29/01 | 22.6 | Γ | |
| Chromium | 6020 | 0.3 | 5 | 5/23/01 | 5/29/01 | 4.3 | | |
| Copper | 6020 | 0.1 | 5 | 5/23/01 | 5/29/01 | 279 | | |
| Iron | 6010B | 5.0 | 2 | 5/29/01 | 5/30/01 | 61500 | | |
| Lead | 6010B | 25.0 | 2 | 5/29/01 | 5/30/01 | 3050 | | |
| Selenium | 6020 | 1.3 | 5 | 5/23/01 | 5/29/01 | 1.3 | ט | |
| Silver | 6020 | 0.03 | 5 | 5/29/01 | 5/30/01 | 6.58 | | |
| Zinc | 6010B | 2.5 | 2 | 5/29/01 | 5/30/01 | 4300 | | |

% Solids: 80.1

Comments:

00023.

-1-

INORGANIC ANALYSIS DATA SHEET

Client:

U.S. Environmental Protection Agency

Service Request: K2103391

Project No.:

U8-010079

Date Collected: 05/09/01

Project Name: NA

Dad

Date Received: 05/14/01

Matrix:

SOIL

Units: MG/KG

Basis: Dry

Sample Name: 01-E2-TA-002-4

Lab Code: K2103391-005

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | c | Q |
|----------|--------------------|------|--------------------|-------------------|------------------|--------|---|---|
| Aluminum | 6010B | 11.1 | 2 | 5/29/01 | 5/30/01 | 1220 | | |
| Antimony | 6020 | 0.06 | 5 | 5/29/01 | 5/30/01 | 118 | Γ | N |
| Arsenic | 6020 | 0.6 | 5 | 5/23/01 | 5/29/01 | 192 | | |
| Cadmium | 6020 | 0.06 | 5 | 5/23/01 | 5/29/01 | 31.9 | | |
| Chromium | 6020 | 0.2 | 5 | 5/23/01 | 5/29/01 | 9.3 | | |
| Copper | 6020 | 0.1 | 5 | 5/23/01 | 5/29/01 | 168 | | |
| Iron | 6010B | 4.4 | 2 | 5/29/01 | 5/30/01 | 30600 | Γ | |
| Lead | 6010B | 22.2 | 2 | 5/29/01 | 5/30/01 | 2970 | | |
| Selenium | 6020 | 1.1 | 5 | 5/23/01 | 5/29/01 | 9.4 | Γ | Γ |
| Silver | 6020 | 0.02 | 5 | 5/29/01 | 5/30/01 | 17.8 | | |
| Zinc | 6010B | 2.2 | 2 | 5/29/01 | 5/30/01 | 4480 | | |

% Solids: 75.2

Comments:

00024

. 16/19/11 SW-846

-1-

INORGANIC ANALYSIS DATA SHEET

Client:

U.S. Environmental Protection Agency

Service Request: K2103391

Project No.: U8-010079

Date Collected: 05/09/01

Project Name: NA

Date Received: 05/14/01

Matrix:

SOIL

Units: MG/KG

Basis: Dry

Sample Name: 01-E2-TA-003-1

Lab Code: K2103391-006

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | c | Q |
|----------|--------------------|------|--------------------|-------------------|------------------|--------|---|---|
| Aluminum | 6010B | 10.6 | 2 | 5/29/01 | 5/30/01 | 5130 | | |
| Antimony | 6020 | 0.53 | 50 | 5/29/01 | 5/30/01 | 233 | | N |
| Arsenic | 6020 | 0.5 | 5 | 5/23/01 | 5/29/01 | 201 | | |
| Cadmium | 6020 | 0.05 | 5 | 5/23/01 | 5/29/01 | 24.2 | | |
| Chromium | 6020 | 0.2 | 5 | 5/23/01 | 5/29/01 | 5.2 | | |
| Copper | 6020 | 0.1 | 5 | 5/23/01 | 5/29/01 | 133 | | |
| Iron | 6010B | 4.2 | 2 | 5/29/01 | 5/30/01 | 34800 | | |
| Lead | 6010B | 21.2 | 2 | 5/29/01 | 5/30/01 | 10300 | | |
| Selenium | 6020 | 1.1 | 5 | 5/23/01 | 5/29/01 | 25.7 | | |
| Silver | 6020 | 0.21 | 50 | 5/29/01 | 5/30/01 | 87.7 | | |
| Zinc | 6010B | 2.1 | 2 | 5/29/01 | 5/30/01 | 11600 | | |

% Solids: 78.7

Comments:

00025

, 26/140

-1-

INORGANIC ANALYSIS DATA SHEET

Matrix:

U.S. Environmental Protection Agency

Service Request: K2103391

Project No.: U8-010079

Date Collected: 05/11/01

Project Name: NA

Date Received: 05/14/01

SOIL

Units: MG/KG

Basis: Dry

Sample Name: 01-E2-SD-001-6

Lab Code: K2103391-007

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | С | Q |
|----------|--------------------|------|--------------------|-------------------|------------------|--------|---|---|
| Aluminum | 6010B | 9.6 | 2 | 5/29/01 | 5/30/01 | 4230 | , | |
| Antimony | 6020 | 0.05 | 5 | 5/29/01 | 5/30/01 | 77.0 | | N |
| Arsenic | 6020 | 0.5 | 5 | 5/23/01 | 5/29/01 | 97.1 | | • |
| Cadmium | 6020 | 0.05 | 5 | 5/23/01 | 5/29/01 | 45.7 | | |
| Chromium | 6020 | 0.2 | 5 | 5/23/01 | 5/29/01 | 8.0 | | |
| Copper | 6020 | 0.1 | 5 | 5/23/01 | 5/29/01 | 117 | | |
| Iron | 6010B | 3.8 | 2 | 5/29/01 | 5/30/01 | 22600 | | |
| Lead | 6010B | 19.1 | 2 | 5/29/01 | 5/30/01 | 2470 | | |
| Selenium | 6020 | 1.0 | 5 | 5/23/01 | 5/29/01 | 5.9 | | |
| Silver | 6020 | 0.02 | 5 | 5/29/01 | 5/30/01 | 12.1 | | |
| Zinc | 6010B | 1.9 | 2 | 5/29/01 | 5/30/01 | 9550 | | |

% Solids: 58.1

Comments:

00026

-1-

INORGANIC ANALYSIS DATA SHEET

Client:

U.S. Environmental Protection Agency

Service Request: K2103391

Project No.: U8-010079

Date Collected: 05/11/01

Project Name: NA

Date Received: 05/14/01

Matrix:

SOIL

MG/KG

Basis: Dry

Sample Name: 01-E2-SD-301-6

Lab Code: K2103391-008

| | | | | | | · | | |
|-----------|--------------------|------|--------------------|-------------------|------------------|--------|---|----------|
| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | С | Q |
| Aluminum | 6010B | 10.4 | 2 | 5/29/01 | 5/30/01 | 5180 | | <u> </u> |
| Antimony | 6020 | 0.05 | 5 | 5/29/01 | 5/30/01 | 69.4 | | N |
| Arsenic | 6020 | 0.5 | 5 | 5/23/01 | 5/29/01 | 154 | | |
| Cadmium . | 6020 | 0.05 | 5 | 5/23/01 | 5/29/01 | 77.0 | | |
| Chromium | 6020 | 0.2 | 5 | 5/23/01 | 5/29/01 | 10.5 | | |
| Copper | 6020 | 0.1 | 5 | 5/23/01 | 5/29/01 | 185 | | |
| Iron | 6010B | 4.2 | 2 | 5/29/01 | 5/30/01 | 27800 | | |
| Lead | 6010B | 20.8 | 2 | 5/29/01 | 5/30/01 | 3340 | | |
| Selenium | 6020 | 1.0 | 5 | 5/23/01 | 5/29/01 | 7.3 | | |
| Silver | 6020 | 0.02 | 5 | 5/29/01 | 5/30/01 | 11.6 | | |
| Zinc | 6010B | 2.1 | 2 | 5/29/01 | 5/30/01 | 11200 | | |

Data Validation Report:

Wet Chemistry and Trace Metals

Project:

Richardson Flats May 2001 Sampling

Project Manager:

Jeff Montera

Site:

Richardson Flats

Sample Delivery Group (SDG):

K2103271 (U8-010079)

Contract Laboratory:

Columbia Analytical Services

Kelso, Washington

Reviewer:

Amy Ballow, CDM Federal Lisa Burnley, CDM Federal

Second Reviewer:

June 21, 2001

Date Reviews Completed:

Matrix:

Soil, Water

Data validation was performed following the guidelines in the Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (USEPA, February 1994).

All data are considered to be valid and acceptable including those analytes that have been qualified as estimated (J). All actions are detailed in the following report.

This report includes analytical results for five soil samples and three water samples (listed below) collected at the Richardson Flats Site during May 2001 and analyzed for wet chemistry parameters and trace metals as listed above by Columbia Analytical Services, Kelso, Washington.

Water samples were analyzed for total metals (Al, Sb, As, Cd, Ca, Cr, Cu, Fe, Pb, Mg, Mn, K, Se, Ag, Na, Zn) and dissolved metals (Al, Sb, As, Cd, Cr, Cu, Fe, Pb, Mn, Se, Ag, Zn). Soils samples were analyzed for arsenic and lead only.

Sample Numbers:

| 01-E1-SW-003-0 | 01-E2-ON-005-2 |
|----------------|----------------|
| 01-E1-SW-303-0 | 01-E2-ON-305-2 |
| 01-E1-SW-002-0 | 01-E2-ON-007-2 |
| 01-E2-ON-001-2 | 01-E2-ON-307-2 |

1. Holding Time and Sample Preservation

All holding times were met.

Although the case narrative indicated the samples were received within the temperature criteria, the Cooler Receipt and Preservation Form indicated the temperature of the coolers upon receipt at the laboratory 10.9 degrees Celsius. No action is taken, as the effect of temperature on the samples is unknown.

2. Instrument Calibration and Calibration Verification

The criteria for initial calibration verification (ICV) and continuing calibration verification (CCV) were within control limits.

3. Blank Contamination

The highest concentration of an analyte detected in a blank sample is used to determine an action level for purposes of data qualification. Blank contamination and actions are discussed below.

(A) Laboratory Blanks

None of the target analytes were detected in the method blanks associated with these samples.

(B) Calibration Blanks

Calibration blank data met required criteria.

(C) Equipment Rinsate and Field Blanks

No equipment rinsate blanks or field blanks were analyzed with this job number.

4. Matrix Spike (MS) Analyses

The MS analyses were performed for all applicable analytes. The percent recoveries (%Rs) for all analytes were within the required QC limits, with the following exception. The %R of selenium was above the the QC limits of 75-125% at 130% in the MS analysis of the water sample 01-E2-SW-303-0. The post digestion spike recovery for selenium was also high at 144%. No action was required, as there were no positive results for selenium reported in the associated water samples. Action is only taken on positive results for recoveries greater than 125% .

The spike recovery for manganese in the post digest MS analysis of sample 01-E2-SW-303-0 was above the QC limits at 260%. The sample concentration for manganese was greater than four times the spike concentration. No action was required.

5. Laboratory Control Samples

The laboratory control samples were analyzed for all analytes and the results are within the required QC limits.

6. Laboratory Duplicate Sample Analyses

All calculable relative percent differences (RPDs) were less than or equal to the validation limits of 20% or within the control limit of \pm the CRDL for water samples. All RPDs were less than or equal to the validation limits of 35% or within the control limits of \pm 2 *CRDL for the soil samples.

7. Field Duplicates

Field duplicate analyses were performed on sample duplicates 01-E2-SW-003-0 / 01-E2-SW-303-0, 01-E2-ON-005-2 / 01-E2-ON-305-0, and 01-E2-ON-007-2 / 01-E2-ON-307-0. Field duplicate results were within appropriate control limits.

8. Instrument Detection Limits

Instrument detection limits met the specified limits of this project.

9. Inductively Coupled Plasma Serial Dilution Analysis

Serial dilutions were performed for each matrix and results of the diluted sample analysis agreed within ten percent of the original undiluted analysis.

10. System Performance and Overall Assessment

The data from the analysis of the listed samples are usable for their intended purpose.

Analytical Report

Client:

U.S. Environmental Protection Agency

roject:

Sample Matrix:

U8-010079 Water

Service Request: K2103271

Date Collected: 5/7/01

Date Received: 5/9/01

Inorganic Parameters

Sample Name:

ab Code: lest Notes: 01-E2-SW-003-0

K2103271-001

Basis: NA

| | | Analysis | | Dilution | Date | Date | ·. | Result |
|------------------------------|------------|----------|------|----------|-----------|----------|--------|--------|
| Analyte | Units | Method | MRL | Factor | Extracted | Analyzed | Result | Notes |
| H . | pH UNITS | 150.1 | | 1 | NA | 5/9/01 | 7.74 | |
| Conductivity | uMHOS/cm | 120.1 | 2 | 1 | NA | 5/11/01 | 1550 | |
| Ikalinity as CaCO3, Total | mg/L (ppm) | 310.1 | . 2 | . 1 | NA | 5/18/01 | 218 | |
| sicarbonate as CaCO3 | mg/L (ppm) | SM 2320B | 2 | 1 | NA | 5/18/01 | 218 | |
| Carbonate as CaCO3 | mg/L (ppm) | SM 2320B | 2 | 1 | NA | 5/18/01 | ND | |
| mmonia as Nitrogen | mg/L (ppm) | 350.1 | 0.05 | 1 | NA | 5/18/01 | ND | |
| Nitrate+Nitrite as Nitrogen | mg/L (ppm) | 353.2 | 0.2 | 1 | NA | 5/16/01 | ND | |
| Phosphorus, Total | mg/L (ppm) | 365.3 | 0.01 | 1 | NA | 5/16/01 | 0.03 | |
| olids, Total Dissolved (TDS) | mg/L (ppm) | 160.1 | 5 | 1 | NA | 5/11/01 | 1150 | |
| olids, Total Suspended (TSS) | mg/L (ppm) | 160.2 | 5 · | 1 | NA | 5/11/01 | . ND | |
| Sulfate | mg/L (ppm) | 300.0 | 20 | 100 | NA | 5/14/01 | 539 ´ | |
| Chloride . | mg/L (ppm) | 300.0 | 4.0 | 20 | NA | 5/14/01 | 78.1 | |
| | | | | | | | | |

SM

Standard Methods for the Examination of Water and Wastewater, 19th Ed., 1995.

0617-01

Approved By:

1\$22/020597p

Date: \$12410

Page No.: 11011

Analytical Report

Client: Project:

Sample Matrix:

U.S. Environmental Protection Agency

U8-010079

Water

Service Request: K2103271

Date Collected: 5/7/01

Date Received: 5/9/01

Inorganic Parameters

Sample Name:

Lab Code:

Test Notes:

01-E2-SW-303-0

K2103271-002

Basis: NA

| | | Analysis | | Dilution | Date | Date | • | Result |
|-------------------------------|------------|----------|---------|----------|-----------|-----------------|--------|--------|
| Analyte | Units | Method | MRL | Factor | Extracted | Analyzed | Result | Notes |
| pН | pH UNITS | 150.1 | · •• | 1 | NA | 5/9/01 | 7.77 | • |
| Conductivity | uMHOS/cm | 120.1 | 2 | 1 | NA | 5/11/01 | 1560 | |
| Alkalinity as CaCO3. Total | mg/L (ppm) | 310.1 | 2 | 1 | NA | 5/18/01 | 216 | |
| Bicarbonate as CaCO3 | mg/L (ppm) | SM 2320B | 2 | 1 | NA | 5/18/01 | 216 | |
| Carbonate as CaCO3 | mg/L (ppm) | SM 2320B | 2 . | . 1 | NA | 5/18/01 | ND | |
| Ammonia as Nitrogen | mg/L (ppm) | 350.1 | 0.05 | 1 | NA | 5/18/01 | ND | |
| Nitrate+Nitrite as Nitrogen | mg/L (ppm) | 353.2 | 0.2 | 1 | NA | 5/16/01 | ND | |
| Phosphorus, Total | mg/L (ppm) | 365.3 | 0.01 | 1 | NA | 5/16/01 | 0.03 | |
| olids, Total Dissolved (TDS) | mg/L (ppm) | 160.1 | 5 | 1 | NA | 5/11/01 | 1100 | |
| Solids, Total Suspended (TSS) | mg/L (ppm) | 160.2 | 5 | 1 | NA | 5 /11/01 | ND · | |
| Sulfate | mg/L (ppm) | 300.0 | 20 | 100 | NA | 5/14/01 | 536 | - |
| Chloride | mg/L (ppm) | 300.0 | 4.0 | 20 | NA | 5/14/01 | 82.0 | |

Standard Methods for the Examination of Water and Wastewater, 19th Ed., 1995.

Approved By:

03271WET.PW1 - 2 5/24/01

Date: 5/24/6

06.19.01

"Tin 12

Analytical Report

lient:

U.S. Environmental Protection Agency

roject:

Sample Matrix:

U8-010079

Water

Service Request: K2103271

Date Collected: 5/7/01

Date Received: 5/9/01

Inorganic Parameters

Sample Name:

ab Code:

01-E2-SW-002-0

K2103271-003

Basis: NA

Test Notes:

| | | Analysis | | Dilution | Date | Date | | Result |
|-------------------------------|--------------|----------|------|----------|-----------|----------|--------|--------|
| Analyte | Units | Method | MRL | Factor | Extracted | Analyzed | Result | Notes |
| рН | pH UNITS | 150.1 | | 1 | NA | 5/9/01 | 7.92 | ** |
| Conductivity | uMHOS/cm | 120.1 | 2 | 1 | NA | 5/11/01 | 1660 | •• |
| Alkalinity as CaCO3, Total | mg/L (ppm) | 310.1 | 2 | 1 | NA | 5/18/01 | 130 | |
| Bicarbonate as CaCO3 | mg/L (ppm) | SM 2320B | 2 | 1 | NA | 5/18/01 | 130 | |
| Carbonate as CaCO3 | mg/L (ppm) | SM 2320B | . 2 | 1 | NA | 5/18/01 | ND | |
| Ammonia as Nitrogen | mg/L (ppm) | 350.1 | 0.05 | 1 | NA | 5/18/01 | ND | • |
| Nitrate+Nitrite as Nitrogen | mg/L (ppm) | 353.2 | 0.2 | 1 | NA | 5/16/01 | ND | |
| Phosphorus, Total | mg/L (ppm) | 365.3 | 0.01 | 1 - | NA | 5/16/01 | 0.03 | |
| Solids, Total Dissolved (TDS) | · mg/L (ppm) | 160.1 | 5 | 1 | NA | 5/11/01 | 836 | |
| Solids, Total Suspended (TSS) | mg/L (ppm) | 160.2 | 5 | 1 | NA | 5/11/01 | ND | |
| Sulfate | mg/L (ppm) | 300.0 | 10 | 50 | NA NA | 5/14/01 | 262 | |
| Chloride | mg/L (ppm) | 300.0 | 10 | 50 | NA | 5/14/01 | 292 | |

Standard Methods for the Examination of Water and Wastewater, 19th Ed., 1995.

Approved By:

1S22/020597p

03271WET.PW1 - 3 5/24/01

Date:

00013

Analytical Report

Client:

U.S. Environmental Protection Agency

K2103271-007

K2103271-008

Project:

U8-010079

Sample Matrix:

Soil

Service Request: K2103271 Date Collected: 5/7/01

Date Received: 5/9/01

7.73

7.66

pН

Prep Method: Analysis Method: NONE

9045C

Units: pH UNITS

Test Notes:

01-E2-ON-007-2

01-E2-ON-307-2

Basis: NA

5/22/01

5/22/01

NA

NA

| Sample Name | Lab Code | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | Result Notes |
|----------------|--------------|-----|--------------------|-------------------|------------------|--------|-----------------|
| 01-E2-ON-001-2 | K2103271-004 | , | 1 | NA | 5/22/01 | 7.83 | |
| 01-E2-ON-005-2 | K2103271-005 | - | 1 | NA | 5/22/01 | 7.60 | |
| 01-E2-ON-305-2 | K2103271-006 | | · 1 | NA | 5/22/01 | 7.44 | |

06-17-01

Approved By:

1A/020597p 03271WET.PW2 - SAMPLE 5/24/01

Page Not 1 () 23

-1-

INORGANIC ANALYSIS DATA SHEET

U.S. Environmental Protection Agency

Service Request: K2103271

Date Collected: 05/07/01

Project Name: NA

Date Received: 05/09/01

Matrix:

WATER

Units: µG/L

Basis: NA

Sample Name: 01-E2-SW-003-0

Lab Code: K2103271-001

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | С | Q |
|-----------|--------------------|------|--------------------|-------------------|------------------|--------|---|--|
| Aluminum | 6010B | 50 | 1 | 5/22/01 | 5/23/01 | 50 | U | |
| Antimony | 6020 | 0.05 | 1 | 5/22/01 | 5/25/01 | 2.12 | | |
| Arsenic | 6020 | 0.5 | 1 | 5/22/01 | 5/25/01 | 4.3 | | Γ |
| Cadmium | 6020 | 0.05 | 1 | 5/22/01 | 5/25/01 | 0.09 | Γ | |
| Chromium | 6010B | 5.0 | 1 | 5/22/01 | 5/23/01 | 5.0 | U | |
| Copper . | 6020 | 0.1 | 1 | 5/22/01 | 5/25/01 | 1.3 | | |
| Iron | 6010B | 20.0 | 1 | 5/22/01 | 5/23/01 | 31.5 | | |
| Lead | 6020 | 0.02 | 1 | 5/22/01 | 5/25/01 | 0.68 | | |
| Manganese | 6020 | 0.05 | 1 | 5/22/01 | 5/25/01 | 378 | | |
| Selenium | 6020 | 3.0 | 1 | 5/22/01 | 5/25/01 | 3.0 | U | N |
| Silver | 6020 | 0.02 | 1 | 5/22/01 | 5/25/01 | 0.02 | ט | |
| Zinc | 6010B | 10.0 | 1 | 5/22/01 | 5/23/01 | 198 | | |

06-17-01

Comments:

Un134

-1-

INORGANIC ANALYSIS DATA SHEET

U.S. Environmental Protection Agency

Service Request: K2103271

Project No.: U8-010079

Date Collected:

05/07/01

Project Name: NA

Date Received: 05/09/01

Matrix:

Units:

µG/L

Basis:

Sample Name: 01-E2-SW-003-0

Lab Code: K2103271-001 DIS

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | С | Q |
|-----------|--------------------|------|--------------------|-------------------|------------------|--------|---|----------|
| Aluminum | 6010B | 50 | 1 | 5/22/01 | 5/23/01 | 50 | ט | |
| Antimony | 6020 | 0.05 | 1 | 5/22/01 | 5/25/01 | 2.16 | 1 | |
| Arsenic | 6020 | 0.5 | 1 | 5/22/01 | 5/25/01 | 4.2 | | |
| Cadmium | 6020 | 0.05 | 1 | 5/22/01 | 5/25/01 | 0.05 | Ü | Π |
| Calcium | 6010B | 50 | 1 | 5/22/01 | 5/23/01 | 230000 | | <u> </u> |
| Chromium | 6010B | 5.0 | 1 | 5/22/01 | 5/23/01 | 5.0 | U | |
| Copper | 6020 | 0.1 | 1 | 5/22/01 | 5/25/01 | 1.4 | | |
| Iron | 6010B | 20.0 | 1 | 5/22/01 | 5/23/01 | 20.0 | Ü | Γ. |
| Lead | 6020 | 0.02 | 1 | 5/22/01 | 5/25/01 | 0.50 | | |
| Magnesium | 6010B | 20.0 | 1 1 | 5/22/01 | 5/23/01 | 49900 | | |
| Manganese | 6020 | 0.05 | 1 | 5/22/01 | 5/25/01 | 381 | | |
| Potassium | 6010B | 2000 | 1 | 5/22/01 | 5/23/01 | 2000 | U | |
| Selenium | 6020 | 3.0 | 1 | 5/22/01 | 5/25/01 | 3.0 | U | N |
| Silver | 6020 | 0.02 | 1 | 5/22/01 | 5/25/01 | 0.02 | Ū | |
| Sodium | 6010B | 100 | 1 | 5/22/01 | 5/23/01 | 47900 | | |
| Zinc | 6010B | 10.0 | 1 | 5/22/01 | 5/23/01 | 127 | | |

06.17-01

Solids: 0.0

Comments:

Un135

-1-

INORGANIC ANALYSIS DATA SHEET

Client:

U.S. Environmental Protection Agency

Service Request: K2103271

Project No.: U8-010079

Date Collected: 05/07/01

Project Name: NA

Date Received: 05/09/01

Matrix:

WATER

Units: µG/L

Basis:

Sample Name: 01-E2-SW-303-0

Lab Code: K2103271-002

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | С | ē |
|-----------|--------------------|------|--------------------|-------------------|------------------|--------|---|----|
| Aluminum | 6010B | 50 | 1 | 5/22/01 | 5/23/01 | 50 | U | _ |
| Antimony | 6020 | 0.05 | 1 | 5/22/01 | 5/25/01 | 2.14 | | |
| Arsenic | 6020 | 0.5 | 1 | 5/22/01 | 5/25/01 | 4.3 | | |
| Cadmium | 6020 | 0.05 | 1 | 5/22/01 | 5/25/01 | 0.10 | | |
| Chromium | 6010B | 5.0 | 1 | 5/22/01 | 5/23/01 | 5.0 | ט | |
| Copper | 6020 | 0.1 | 1 | 5/22/01 | 5/25/01 | 1.4 | | |
| Iron | 6010B | 20.0 | 1 | 5/22/01 | 5/23/01 | 31.0 | | |
| Lead | 6020 | 0.02 | 1 | 5/22/01 | 5/25/01 | 0.69 | | Ī. |
| Manganese | 6020 | 0.05 | 1 | 5/22/01 | 5/25/01 | 387 | | , |
| Selenium | 6020 | 3.0 | 1 | 5/22/01 | 5/25/01 | 3.0 | ט | N |
| Silver | 6020 | 0.02 | 1 | 5/22/01 | 5/25/01 | 0.02 | Ū | |
| Zinc | 6010B | 10.0 | 1 | 5/22/01 | 5/23/01 | 175 | | |

06-17-01

Solids: 0.0

Comments:

U1136

-1-

INORGANIC ANALYSIS DATA SHEET

Client:

U.S. Environmental Protection Agency

Service Request: K2103271

Project No.: U8-010079 Date Collected: 05/07/01

Project Name: NA

Date Received: 05/09/01

WATER Matrix:

µG/L Units:

Basis:

Sample Name: 01-E2-SW-303-0

Lab Code: K2103271-002 DIS

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | С | Ω |
|-----------|--------------------|------|--------------------|-------------------|------------------|--------|----|----------|
| Aluminum | 6010B | 50 | 1 | 5/22/01 | 5/23/01 | 50 | U | |
| Antimony | 6020 | 0.05 | 1 | 5/22/01 | 5/25/01 | 2.10 | 1 | 1 |
| Arsenic | 6020 | 0.5 | 1 | 5/22/01 | 5/25/01 | 4.1 | | |
| Cadmium | 6020 | 0.05 | 1 | 5/22/01 | 5/25/01 | 0.05 | | <u> </u> |
| Calcium | 6010B | 50 | 1 | 5/22/01 | 5/23/01 | 224000 | 1 | 1 |
| Chromium | 6010B | 5.0 | 1 | 5/22/01 | 5/23/01 | 5.0 | U | |
| Copper | 6020 | 0.1 | 1 | 5/22/01 | 5/25/01 | 1.5 | Γ | |
| Iron | 6010B | 20.0 | 1 | 5/22/01 | 5/23/01 | 20.0 | Ū | } |
| Lead | 6020 | 0.02 | 1 | 5/22/01 | 5/25/01 | 0.44 | · | |
| Magnesium | 6010B | 20.0 | 1 | 5/22/01 | 5/23/01 | 49000 | | |
| Manganese | 6020 | 0.05 | 1 | 5/22/01 | 5/25/01 | 372 | | |
| Potassium | 6010B | 2000 | 1 | 5/22/01 | 5/23/01 | 2000 | ט. | |
| Selenium | 6020 | 3.0 | 1 | 5/22/01 | 5/25/01 | 3.0 | U. | N |
| Silver | 6020 | 0.02 | 1 | 5/22/01 | 5/25/01 | 0.02 | ט | |
| Sodium | 6010B | 100 | 1 | 5/22/01 | 5/23/01 | 47400 | | |
| Zinc | 6010B | 10.0 | 1 | 5/22/01 | 5/23/01 | 128 | | |

06-17-01

Solids: 0.0

Comments:

U1137

-1-

INORGANIC ANALYSIS DATA SHEET

U.S. Environmental Protection Agency

Service Request: K2103271

-Project No.: U8-010079

Date Collected: 05/07/01

Project Name: NA

Date Received:

05/09/01

Matrix:

WATER

Units: µG/L

NA Basis:

Sample Name: 01-E2-SW-002-0

Lab Code: K2103271-003

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | С | Q |
|-----------|--------------------|------|--------------------|-------------------|------------------|--------|----|---|
| Aluminum | 6010B | 50 | 1 | 5/22/01 | 5/23/01 | . 50 | U | |
| Antimony | 6020 | 0.05 | 1 | 5/22/01 | 5/25/01 | 9.11 | | Ī |
| Arsenic | 6020 | 0.5 | 1 | 5/22/01 | 5/25/01 | 4.5 | | |
| Cadmium | 6020 | 0.05 | 1 | 5/22/01 | 5/25/01 | 7.02 | | |
| Chromium | 6010B | 5.0 | 1 | 5/22/01 | 5/23/01 | 5.0 | ָט | |
| Copper | 6020 | 0.1 | 1 | 5/22/01 | 5/25/01 | 4.8 | | |
| Iron | 6010B | 20.0 | 1 | 5/22/01 | 5/23/01 | 224 | | |
| Lead | 6020 | 0.02 | 1 | 5/22/01 | 5/25/01 | 27.9 | | |
| Manganese | 6020 | 0.05 | 1 | 5/22/01 | 5/25/01 | 192 | | |
| Selenium | 6020 | 3.0 | 1 | 5/22/01 | 5/25/01 | 3.0 | ט | И |
| Silver | 6020 | 0.02 | 1 | 5/22/01 | 5/25/01 | 0.12 | | |
| Zinc | 6010B | 10.0 | 1 | 5/22/01 | 5/23/01 | 1740 | | |

06-17-01

% Solids: 0.0

Comments:

01138

SW-846

-1-

INORGANIC ANALYSIS DATA SHEET

Client:

U.S. Environmental Protection Agency

Service Request: K2103271

Project No.: 'U8-010079' --

Date Collected: 05/07/01

Project Name: NA

Date Received: 05/09/01

Matrix: WATER

Units: µG/L

Basis: NA

Sample Name: 01-E2-SW-002-0

Lab Code: K2103271-003 DIS

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | C | Ω |
|-----------|--------------------|------|--------------------|-------------------|------------------|--------|---|---|
| Aluminum | 6010B | 50 | 1 | 5/22/01 | 5/23/01 | 50 | U | |
| Antimony | 6020 | 0.05 | 1 | 5/22/01 | 5/25/01 | 8.45 | | |
| Arsenic | 6020 | 0.5 | 1 | 5/22/01 | 5/25/01 | 2.8 | | |
| Cadmium | 6020 | 0.05 | 1 | 5/22/01 | 5/25/01 | 6.00 | | |
| Calcium | 6010B | 50 | 1 | 5/22/01 | 5/23/01 | 145000 | | |
| Chromium | 6010B | 5.0 | 1 | 5/22/01 | 5/23/01 | 5.0 | Ü | |
| Copper | 6020 | 0.1 | 1 | 5/22/01 | 5/25/01 | 8.0 | | |
| Iron | 6010B | 20.0 | 1 | 5/22/01 | 5/23/01 | 38.0 | | |
| Lead | 6020 | 0.02 | 1 | 5/22/01 | 5/25/01 | 3.48 | | |
| Magnesium | 6010B | 20.0 | 1 | 5/22/01 | 5/23/01 | 32300 | | |
| Manganese | 6020 | 0.05 | 1 | 5/22/01 | 5/25/01 | 182 | | |
| Potassium | 6010B | 2000 | 1 | 5/22/01 | 5/23/01 | 2170 | | |
| Selenium | 6020 | 3.0 | 1 | 5/22/01 | 5/25/01 | 3.0 | ש | N |
| Silver | 6020 | 0.02 | 1 | 5/22/01 | 5/25/01 | 0.02 | ט | |
| Sodium | 6010B | 100 | 1 | 5/22/01 | 5/23/01 | 148000 | | |
| Zinc | 6010B | 10.0 | 1 | 5/22/01 | 5/23/01 | 1720 | | |

06-17-01

& Solids:

Comments:

Un139

-1-

INORGANIC ANALYSIS DATA SHEET

Client:

U.S. Environmental Protection Agency

Service Request:

Project No.: U8-010079

Date Collected: 05/07/01

Project Name: NA

Date Received: 05/09/01

Matrix:

SOIL

Units:

MG/KG

Dry

Basis:

Sample Name: 01-E2-ON-001-2

Lab Code: K2103271-004

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | С | Q |
|---------|--------------------|------|--------------------|-------------------|------------------|--------|---|---|
| Arsenic | 6020 | 0.6 | 5 | 5/22/01 | 5/25/01 | 15.5 | | |
| Lead | 6020 | 0.06 | 5 | 5/22/01 | 5/25/01 | 319 | | |

06.17.01

Solids:

Comments:

UU311 SW-846

-1-

INORGANIC ANALYSIS DATA SHEET

Client:

U.S. Environmental Protection Agency

Service Request: K2103271

Project No.: U8-010079

Date Collected: 05/07/01

Project Name: NA

Date Received: 05/09/01

Matrix:

SOIL

Units: MG/KG

Basis: Dry

Sample Name: 01-E2-ON-005-2

Lab Code: K2103271-005

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | С | Q |
|---------|--------------------|------|--------------------|-------------------|------------------|--------|--------|---|
| Arsenic | 6020 | 0.6 | 5 | 5/22/01 | 5/25/01 | 5.0 | \Box | |
| Lead | 6020 | 0.06 | 5 | 5/22/01 | 5/25/01 | 27.9 | | |

AB 06.17-01

Solids:

Comments:

00312

-1-

INORGANIC ANALYSIS DATA SHEET

U.S. Environmental Protection Agency

Service Request: R2103271

Project No.: U8-010079

Date_Collected: 05/07/01

Project Name: NA

Date Received: 05/09/01

Units: MG/KG

Basis: Dry

Matrix: SOIL

Sample Name: 01-E2-ON-305-2

Lab Code: K2103271-006

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | С | Q |
|---------|--------------------|------|--------------------|-------------------|------------------|--------|---|---|
| Arsenic | 6020 | 0.6 | 5 | 5/22/01 | 5/25/01 | 4.7 | | |
| Lead | 6020 | 0.06 | 5 | 5/22/01 | 5/25/01 | 32.3 | 1 | |

Solids:

Comments:

00313

-1-

INORGANIC ANALYSIS DATA SHEET

Client:

U.S. Environmental Protection Agency

Service Request: K2103271

Project No.: **U8-010079** Date Collected: 05/07/01

Project Name: NA

Date Received: 05/09/01

Matrix:

SOIL

Units: MG/KG

Basis: Dry

Sample Name: 01-E2-ON-007-2

Lab Code: K2103271-007

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | C | Q |
|---------|--------------------|------|--------------------|-------------------|------------------|--------|---|---|
| Arsenic | 6020 | 0.5 | 5 | 5/22/01 | 5/25/01 | 14.3 | | |
| Lead | 6020 | 0.05 | 5 | 5/22/01 | 5/25/01 | 202 | | |

Solids: 78.2

Comments:

06-17-01 00314

-1-

INORGANIC ANALYSIS DATA SHEET

Client:

U.S. Environmental Protection Agency

Service Request: K2103271

Project No.: U8-010079

Date Collected:

05/07/01

Project Name: NA

Date Received: 05/09/01

Matrix:

SOIL

Units: MG/KG

Basis: Dry

Sample Name: 01-E2-ON-307-2

Lab Code: K2103271-008

| Analyte | Analysis Method | MRL | Dilution Factor | Date Extracted | Date Analyzed | Result | С | Q |
|---------|--------------------|------|--------------------|-------------------|------------------|--------|---|---|
| Arsenic | 6020 | 0.5 | 5 | 5/22/01 | 5/25/01 | 11.4 | | |
| Lead | 6020 | 0.05 | 5 | 5/22/01 | 5/25/01 | 144 | | |

Solids: 78.3

Comments:

06.17.01

00315

I. INORGANIC ANALYSIS WORKSHEET - HOLDING TIMES



| BATCH: | K2103271 | |
|--------|----------|--|
| | | |

| | Sam | nple (D | Ma | atrix | | Pre- ative 3, C) | | ate ected | Ana | etals alysis ite/s | *Hg CVAA Analysia Date | CN Analysis Date | Analysis Date/s | No. of Days Past Holding Time | Action |
|--------------|-------------------|---|--|----------|--|------------------------|--|--------------|--------------|--------------------------|------------------------------|---------------------|--|--|--------------|
| | 01-E2-01 | 1-001-2 | S | 21 | ٨ | M | 050 | 701 | 05·K | 10.0 | , | | • • | 0 | None |
| 4 | | -005-2 | | | | | | | | | | | | | |
| 1 | | -305-2 | | 1 | | | | | | | | | | | |
| 1 | | -007-2 | | | | | | | | | | | | | |
| 11 | | -307-2 | | T | | | | | | | | | ···· | | |
| 1 | | <u> </u> | | | | - | | | | | | | | | |
| 1 | 01-F2 SI | W-0030 761 | W | Je | 7 | | 0.51 | 77-Ol | 83. | 2501 (50) | | | | 0 | None |
| $(\uparrow$ | <u> </u> | J D.S. | | | T | | , v. | 1 | 1 | | | | | | |
|)[| 01-E2-5V | | | | | | | 1. | | | | | | 1 . | |
| 51 | <u> </u> | L Diss. | | | | | | 1 | | | | | | | |
| /٢ | 01- E2-SV | | | | | | | | | | | | | | |
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| ŀ | COMMENTS | Soil | | - Δ- | ·Ph | 001 | 10 | 16 | 120 |) | <u> </u> | <u></u> | | <u> </u> | · · |
| | | 1,A2-Sb, Cd, C. | $\frac{1}{\Lambda}$ | PL | 71. A. | <u>Ç.</u> | | | | | C- M- K | No only D | <u></u> | 109 | |
| 1 | 1.0019 - 11 | | <u> </u> | ,, 0,, | 600 | D.6 | 020 | <u>~~°</u> | | <u> </u> | wing.n | , /VII - OHI D | , | | Ursony |
| - | Coolee | 70np = 10. | a . | | | | | | | | | | <u> </u> | 101.0 | 0 |
| | Actions: | 1-1p - 10. | 7_6 | <u> </u> | <u> </u> | <u> </u> | | | | | | | | <u> </u> | |
| . : | 2. If holding tin | nes are exceeded, nes are grossly ex | ceede | d (>=2 | *holding | time), | | | s are | | | | | | • |
| • | estimated (J), a | and non-detected r | esults | are re | jected (I | ₹). | | | | | Validated by: | Any 1 | SALLAL | 06-17 | Date: アムリ |
| 1 | Preservatives: | : | | | | | | | | | | / Iril L | 7/16UW | | 01 |
| | | w/HNO3 and coole | d to 4 | •c | | | | | | | Review 8y: | Amy I | ر عاد | | Date: |

| ANALYTE | HOLDING TIME | PRESERVATIVE | | | | |
|---------|--------------|--------------------------|----------|--|--|--|
| | | AQUEOUS | SOIL | | | |
| Metals | 180 days | pH < 2 w/HNO3, 4 Deg. C | 4 Deg. C | | | |
| Mercury | 28 days | pH < 2 w/HNO3, 4 Deg. C | 4 Deg. C | | | |
| Cyanide | 14 days | pH > 12 w/NaOH, 4 Deg. C | 4 Deg. C | | | |

Holding Time = Analysis Date - Collection Date

C. No Preservative

IIA. INORGANIC ANALYSIS WORKSHEET -- ICP CALIBRATIONS

| 100 | | 24 |
|-----|---|----|
| | _ | |

| BATCH: | K | 2103271 | |
|--------|---|---------|--|
| | | | |

| List all ICP analytes that did not meet the percent recovery criteria for initial calibration verification | τ (ICV) and |
|--|-------------|
| continuing calibration verification (CCV). | |
| | |

| Analyte | CCA | TRUE | Found | % R | Action | Samples Affected |
|---------------------------------------|------------------|--------------|-----------------|---------------------------------------|-----------------|--------------------|
| As, Pb | TCV. CCV'S | | | | None | All W/19 90-1109,/ |
| (5015) | | | | | 1 | |
| · · · · · · · · · · · · · · · · · · · | | | | | | |
| | | | | · | | |
| Water | ICV | <u> </u> | | | None | All 1/19 90-1109. |
| See List below | CCVS | | | <u> </u> | | |
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| OV run alter(CRI, | every 10 sample: | and at end o | f.sequences? (C | CLP only) | Yes No |) |
| as a CRDL check | sample (CRI) an | | | t the end of ea | ch sample run (| CLP only)? Yes No |
| OMMENTS 5 | | | | | | |
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ICV/CCV Actions:

PERCENT RECOVERY 75-89% 90-110% <75% 111-125% >125% Detected results R J R UJ ٧ ٧ ٧ Non-detected Results R

| 111 | INCREANIC | ANIAI VOIC | WORKSHEET. | |
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| | MATRIX: | Sol/ | Water | | | BATCH: | K2103271 |
|---|----------------|---------------------------------------|-----------------------------|-----------------|------------------|--|---------------------------------------|
| | | / | | | | ÷ | |
| List the highest positi | ve AND negat | ive blank resu | It >= DL below | . Use one work | sheet for soil i | matrix and and | other for water matrix. |
| Analyte | CCB PB/MB | IDL | Blank Conc. | 5 * Bl. Conc. | Action | | Samples Affected |
| As, Pb | ICB | As: 1.012 | AII"U | , | None | - Okan | / |
| 501 | CCB | Pb=0.104 | 7 | | | 7 | |
| | PB / | 1.0. | | | | | |
| | / | | | | | · | |
| | | | | | | | |
| Wes. | ICB | | All'u' | | None | Oka | 1/ |
| (Full list) | CCB) | | | | | | |
| as I. | PB/ | | | | | | |
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| | <u> </u> | <u> </u> | | L | | <u> </u> | <u> </u> |
| NOTE: Verify that the | absolute valu | ue of any anal | yte concentration | on in the PB or | MB is < CRDL | | |
| <u>Verify</u> | | | | · | | | <u> </u> |
| One prep blank per m | | · · · · · · · · · · · · · · · · · · · | ····· | | | | |
| One prep blank per ba | | | | | | | |
| ICB analyzed immedi CCB analyzed after e | | , | | | | ··· | |
| Field/equipment/rinsa | | ward? If so i | nclude above if | annlicable to a | roject | <u></u> | |
| COMMENTS | IC DISTING SUE | yzeur 11 30, 1 | IIOUGE ADOVE II | applicable to p | iojeu. | | |
| COMMENTS | | · · · · · · · · · · · · · · · · · · · | | | | | |
| Actions: | | | , - - | · | · | | |
| Actions. | | | | | | | • |

- 1. If |Blank| < IDL, no action is taken.
- 2. If Blank > = IDL, then all sample results > = IDL and < 5*Blank are non-detected (U).
- 3. If Blank = < -IDL, all sample results > = IDL and < 5° [Blank] are estimated (J).
- 4. If Blank = < -IDL then all non-detected results are estimated (UJ).
- * If blank concentration > CRDL, all detected sample results < 5 *Blanks are rejected (R).
- * If blank concentration > CRDL, all detected sample results > 5 *Blanks and < 10* Blank are estimated (J).



| | | | | BATCH: | K 2103271 | | | |
|---------------------------------------|--------------------------|-----------------------------|---|--|---------------------------------------|--|--|--|
| | | | , if the sample conce | entrations of AI, Ca, | Fe and Mg are less than or | | | |
| al to the concentrati | ion found in the IC | SA solution. | | | | | | |
| mine the sample re | sults in ug/L and lis | st any Al, Ca, Fe or Mg | results that are grea | ter than the ICSA v | alues. | | | |
| Connello ID | A b 4- | Compto Book | 100.1/-1 | | Commonts | | | |
| Sample ID | Analyte | Sample Result | ICS Value | , | Comments | | | |
| | · | | | NA. Soil | for As Pb caly | | | |
| | | | | 1011 2011 | 107 713 72 3413 | | | |
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| Analyte | % R | Action | Samples Affected | | | | | |
| | | | Arsenic : | 109 Soil | 5 | | | |
| | | | NA | | 2 | | | |
| | | | IV PC | VB. 7 | | | | |
| | · | | 151 | 80·1209·V | / | | | |
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| Protocol Only | | | | | | | | |
| e Interference Chec ore frequent)? | ck Samples run at Yes | the beginning and end No | or each sample analy | ysis run, or a minim | um of twice per 8-hour shift (whi | | | |
| MENTS | | | | | | | | |
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| ons: | | | | | | | | |
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| | | PERCENT RECO | VERY | | Marie . | | | |
| | | <50% | 50-79% | 80-120% | >120% | | | |
| cted results | | R | J | V | J | | | |
| | | · 🕒 | 111 | | | | | |

IVB. INORGANIC ANALYSIS WORKSHEET -- ICP INTERFERENCE CHECK SAMPLE

| BATCH: | KZ103271 |
|-----------|----------|
| DC 1 O1 1 | ,0210 |

Note: For the CLP protocol only, report the concentration of any analytes detected in the ICSA solution > |IDL | that should not be present (apply only to samples with elements identified at concentrations above the ICSA on the previous page).

| Analyte | ICSA Result | Action | Sample/ Result | Sample/ Result | Sample/ Result | Sample/ Result | Sample/ Result | Sample/ Result |
|-------------------------------------|-------------|---------------|--|---------------------------------------|-------------------|-------------------|-------------------|-------------------|
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Actions:

If the ICSA value > the positive IDL:

- 1. For non-detected results, no action is taken.
- 2. Estimate (J) all detected results < = 5*ICSA.

If the ICSA value < -IDL:

- 1. Estimate (J) detected results < = 5° |ICSA|.
- 2. Estimate (UJ) non-detected results.

V. INORGANIC ANALYSIS WORKSHEET - PRE-DIGESTION MATRIX SPIKE

| | | | MATRIX: | 5.1/ | Water | - | ВАТСН: | K203271 |
|---|-----------------|--|--|---|---------------------------------------|-----------------|-----------------|-----------------------------------|
| Na, Al and Fo | e for soil sámp | oles, and Ca, I | Mg, K and Na | for water sample | es. | | recovery criter | ria are not evaluated for Ca, Mg, |
| If the sample | result exceed | | ided by a fact | or of 4 or more, | no action is t | aken. | | |
| Sample ID | Analyte | Spiked Sample Result | Sample Results | Spike Added | % R | Action | : | Samples Affected |
| 18.010079 | As | Soils / | | | 899. | · None | Olan | |
| 1)-E2-ON 201 | Pb/ | / | | <u> </u> | 79% | <u></u> | 1 | |
| (-0015) | Janel A | | | | 969. | None | Alexa ! | |
| <u> </u> | digest An | / | | | 969. | /Voic | UKAN | <u></u> |
| • | | | | | | | | |
| | | | 1 | | | · | AU C | |
| 01·E25H-303+ (-0025) | s Sc | 266 1. D | I U | 20.0 # = 1449. | 1309.1 | I tonly | 7411 Se | in Wato on) = All Se = U" |
| (4023) | | TC: Fost- | Digest res | 1712 | · ·- · | CIW IMS - | V IVO HCHI | all) - All Je - Ul |
| | Post dige | 9 4 | | | | | | |
| | ·Ma | 400 | 307 | 5 | 2607 | No Actio | n on Pool. | dia |
| | | ļ | <u> </u> | <u> </u> | | ļ | Also | somple conc >4x spike |
| · | | | | | | | 74 | HOW |
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| Was a pre more frequent | | <u> </u> | pared at the re イ: 6。 | equired frequence $\mathcal{N} = \mathcal{N}$ | y of once eve Note | ery 20 samples | , or every SD | G (whichever is |
| 2. Was a pos | st-digestion m | atrix spike an | | CP elements, e | xcept Silver, | that did not me | et the pre- | 4 = 20160 |
| | trix spike reco | | | | A (Yes) | No No | COIL 7 | 7 |
| COMMENTS | | | | | ···· | | | |
| - · · · · · · · · · · · · · · · · · · · | | · | | | | | | |
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Actions:

Detected results Non-detected Results

If analyte concentrations in the sample is greater than 4 times the amount spiked, then limits do not apply.

< 30%

R

PERCENT RECOVERY 30-74%

UJ

> 125%

VI. INORGANIC ANALYSIS WORKSHEET -- LABORATORY DUPLICATES

| | | MAT | TRIX: | Soil M | de | BAT | сн: <u> </u> |
|------------------------------|------------------|------------------|----------------|-----------|-------------------------|---------|---------------------------------------|
| List all parame | ters that do not | meet RPD or 0 | CRDL criteria. | | | | |
| Sample ID | Analyte | Sample Result | Dup. Results | · RPD | Difference ³ | Action | Samples Affected |
| 18-010079 | As | 15.5 | 16.3 | 5 V | | None | All Win critoria |
| MS-S- | РЪ | 319 | 323 | 1/ | · | 1 | <u> </u> |
| of e201-1922 | 01-E2-01-001- | 12D | | | | | 2.357 |
| (-004+) | (2040) | | _ | | | | |
| 0 ·E25N303dD | A)) | | | | | None | - All 435 420% |
| (-002D) | 7,11 | | | | | 74.0 | or Siff LCRDL |
| | | | | | | | |
| Field | Suplicates | were not rep | color as | follous | | | |
| | | 0/01E254 | | | | | |
| | | 01. E2.0A | | So. 1 | | | |
| 01 22 | 01. 00. 2 | 0 | 00, 2 | Soils | | | |
| -8037 | -00-3037 | | | -005 kg. | 5 | | |
| | 31.0 = 1 | ? Win | ø. | As : 5.0 | | / \ 01 | w/rn 35%. |
| Fe 31.5 Cu 1.3 | 1.4 -> 7 | 3 Oby | | Pb - 27.9 | 323 = 14 | | 9 |
| My 370 Cd 0.04 Zn = 19 | 010 - 11 | 9. | | | | | |
| Zn = 19 | 8/175 = 12 | 7.0 | | -007 /- 3 | 07 | | |
| 003 Da | 303Dis. | | | As = 14 | | 225% | w/in 35/. |
| | | m/m | 299 | Pb 202 | | - 335% | / |
| Bh 2.16 /2. | 1224000 2 | 1 Oknon | 20% | | | | • |
| My 44400 | 149006 -27 | | | | | | |
| NA 470 | 00/47400= | 29/ | | | | | · |
| COMMENTS | | | | | | | |
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Actions:

1. AQUEOUS

If both sample values > 5°CRDL, estimate (J/UJ) all sample results of the same matrix if the RPD is > 20%.

If either sample value < 5°CRDL, and the difference between the duplicate and the original is > CRDL, estimate (J)/(UJ) all sample results of the same

2. SOLID

If both sample value > 5°CRDL, estimate (J/UJ) all sample results of the same matrix if the RPD is > 35%.

If either sample value < 5°CRDL, and the difference between the duplicate and the original is > 2°CRDL, estimate (J)/(UJ) all sample results of the

Difference = |Sample result - Duplicate sample result| Include outliers for field duplicates (if applicable)

Note

A duplicate sample must be prepared for each sample matrix analyzed or per batch, whichever is more frequent.

VII. INORGANIC ANALYSIS WORKSHEET - LABORATORY CONTROL SAMPLES

| | | MATRIX: | Soil/W | we | | BATCH: | K210329 | 1) . |
|----------------------------------|-------------------|-----------------|--------------------|-----------------|--|---------------------------------------|------------------|---|
| List all paramete | ers that do not m | | recovery criteria. | | | | | |
| LCS ID | Analyte | True Value | Found Value | % R | Action | 1 | Samples Affected | |
| Soil / | Aa | | | 969 | None | Okan W/n | rage - Soi | 5 |
| -811 | As Pb | | | 969 | J | 0 | THIE ST. | . <u>. </u> |
| | 1.0 | | | | | | | |
| | | | | <u> </u> | | | | |
| | 111 01 1 | | | | | 14/ | | |
| Water / | All Elements | | | | None - | - W/in 80-1 | 20/ | |
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| Note: | | | | | | | • | |
| LCS with the sai | me matrix as sa | mples must be p | repared for each | SDG. | | | | |
| COMMENTS | | _ • | | | | | | |
| JOHN LIVE | | | | | ······ | | | |
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| Actions: | mony and silver | have no control | limits. An aquec | ous I CS is not | required for CN | and mercury. | | |
| Exception. Anti | mony and saver | Mave no connor | mma, maquet | 705 EGG 15 110t | Toquiros for Oil | and moreony. | • | |
| | | | | | TRECOVERY | | | |
| 1. AQUEOUS | • | | <50% | 50-79% | 80-120% | >120% | | |
| Detected results | | <u>.</u> | R R | nn 1 | V | A A | | |
| Non-detected re | sults | | K | 03 | • | . • | | |
| 2. SOLID LCS | | | • | | | | | |
| Recoveries stipe | ulated by EMSL | | | ٠ | | | | |
| · | - | | BELOW | | WITHIN | | ABOVE | |
| | | | CONTROL | | CONTROL | | CONTROL | |
| Data stad 15 | _ | | LIMITS | | LIMITS | | LIMITS | |
| Detected results Non-detected re | | | nn 1 | | v v | | Λ 1 | |
| HOH-GELECIEU IE | .ouno | | | | | | | orang via |
| | | | | | | • | HAG | org98.xls |

IX. INORGANIC ANALYSIS WORKSHEET - ICP SERIAL DILUTION ANALYSIS

| | MATRIX: | | Soil / Wa | - - - | | | тсн: <u>V2103271</u> |
|---------------------------------------|------------------|--------------------|-------------------|---------------------------|----------------|---------------|----------------------|
| Serial dilution cr | riteria only app | lies if the origin | | ult is at least 50° I | DL and %D > | 10%. | |
| Analyte | IDL | 50*IDL | Sample Results | Serial Dilution Result | % D | Action | Samples Affected |
| al-E20N-307-2 | ۲. | | | | | | |
| / As | | | 21.3 | 22.5 | 51 | None | Okan |
| Pb | | | 270 | 281 | 4/ | | 1 |
| | | | · | | | | |
| 01.7 | MRL | | | | | | * 0 |
| Sb (6020) | 0.05 | 2.5 | 2.14 | 1.89 | 12 | None | L50-IDL |
| As (6020) | 0.5 | 25 | 4.34 | 3.64 | 16 | |) Okay |
| Pb (6420) | 0.02 | 1.0 | 0.67 | 0.56 | 18 | J | <u> </u> |
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| INDUCTIVELY | COURLED PL | ASMA SERIAL | | I ALYSIS | | | |
| Serial dilutions v | vere performe | d for each mate | ix and results | of the diluted sam | ple analysis : | agreed within | |
| ten percent of the Serial dilutions v | ne original undi | iluted analysis. | Yes Yes | No | | | |
| | not beno | THE TOT BE TO | TOTALIS. | | | | <u> </u> |
| COMMENTS | | | | | | | |
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Actions:

Estimate (J) detected results if %D is > 10%.

NOTES

If results from diluted samples are higher than concentrated sample, matrix interference should be suspected and sample results may be blased low.

والمنتفذ

X. INORGANIC ANALYSIS WORKSHEET - SAMPLE RESULT VERIFICATION

BATCH: <u>K210 3271</u>

| 1. Describe any raw data anomalies (i.e., baseline shifts, negative absorbances, transcription or calculation errors, legibility, etc. |
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| List results that fall outside the linear range of the ICP instrument or the calibrated range of the AA or Cyanide instrument, and were not reanalyzed. |
| |
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| |
| |
| 3. Were ICP linear ranges obtained within 3 months of, and preceding, the sample analyses? Yes No NA |
| No dale analyzed 5-10-01/5-25-0) |
| 4. Were ICP interelement corrections obtained within 12 months of, and preceding, the sample analyses? Yes No NA |
| No date > No CRDL - IDL |
| 5. Were instrument detection limits present, found to be less than or equal to the CRDL, and obtained within 3 months of, and |
| preceding, the sample analyses? Yes No NA / |
| No CRDL on IDL'S → MRL's provided |
| 6. Were all sample results reported down to the IDL if running CLP protocol? Yes No NA |
| reported to MRL's/ |
| 7. Were all sample results reported down to MDL if running SW-846 methods? Yes No NA |
| |
| 8. Were sample weights, volumes, percent solids, and dilutions used correctly when reporting the results? Yes No |
| |
| · · · · · · · · · · · · · · · · · · · |
| COMMENTS $Soil = 1g - 2100mY$ |
| Water 50mV -> 50mV |
| |
| ic: Soil 04 = A3 = 25.19/3 = OIL, 5 = 12595, m., 1 = 155 |
| 19 0 45 april 1 |
| Ph (Use 208) = 319 k . 0.16 , 5 , 1 - 319 mg |
| 2 19 0.811 100 |
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I WATER QUALITY PARAMETERS WORKSHEET -- HOLDING TIMES

| | | | MATRI | (:b | Sater_ | | Annonio; | BATCH: | K2 | 10327 | | |
|----------|------------------|---------------------------|----------|--|--|-----------------------|-----------------------------------|---------------|---------|------------------|---------------------------------------|---------------|
| Γ | | | | 14 dag | (sobs) | Phos | NHTRATE | SULFATE | (7days) | Corbonale | Endowe | |
| | SAMPLE | PRE- SERVED | DATE | ALKALINIT | CHLORIDE ANALYSIS | F LUORI DE | NITRITE ANALYSIS | SULFIDE | TSS | GOO3 ANALYSIS | HOLDING | • |
| <u> </u> | ۵۱ | Y/N | SAMPLE | DATE | DATE | DATE | DATE | DATE | DATE | DATE | MET | ACTION |
| | 2-5W003-0 | | 05070 | 5-1001 | 5-14 | 5-1601 | 6.14 | 5- HOI | 54101 | 5-104 | DID 5 40. | None |
| | F25W-303-0 | | | | | - | Apres : 5-18 NB 5-16-/ 5-18 | | | | PH Co-05-11 | |
| 01.1 | es.swood | | <u> </u> | 1- | <u> </u> | <u> </u> | ND2 5-4 | | | -1 | PH Cond 5+1) | |
| | 2011 - 14 | | | A 741 | 10/ | -14 | | | | | | |
| OFE | 20N-0012 | | 05070 | 75-9/ | PH 5-22- | | | | | | | |
| | -005-2 -305-2 | | | | | | | | | | | |
| | -007-2 | | | | | | | | | | | |
| | -307-2 | | -, - | 1 | 1 | | | | | | - | . |
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| COMM | IENTS PH | =48 his - | //288 | | | | 1/ | 20 14 da | | | | |
| | <u>Cl</u> | <u>,500 - ,</u> 53,703 | <u> </u> | | אסחים | | ducturas= | <u>/ 28 d</u> | | | · · · · · · · · · · · · · · · · · · · | |
| | <u></u> | <u>س، س</u> | - V V | MY HE | יין אייויטר | 14/1 | CONTRACT S | 14 days | | | | |

Action:

- 1. If holding times are exceeded, all positive results are estimated (J) and non-detects are estimated and undetected (UJ).
- 2. If the holding times are grossly exceeded, the reviewer may determine that all positive results are estimated (J), and non-detects should be rejected (R).

| ANALYTE | METHOD | HOLDING TIME | PRESERVATIVE | |
|---------------------|---------|--------------|-----------------------------|--------------------|
| Chloride | 325.2 | 28 days | 4 degrees C | |
| Nitrate/Nitrite | 353.2 | 28 days | [4 | |
| Sulfate | 375.2 | 28 days | 4 degrees C | 1-MY DALLOW 06-170 |
| Sulfide | 376.1 | 28 days | 4 degrees C & pH >9 w/NaOH | Validator Date |
| Alkalinity | SM 2320 | 14 days | 4 degrees C | |
| Tot. Dissolved Sol. | 160.1 | 7 days | 4 degrees C | · |
| Tot. Suspended Sol. | 160.2 | 7 days | 4 degrees C | |
| Oil/Grease | 413.1 | 28 days | [4 | |
| Cyanide | 335.3 | 14 days | 4 degrees C & pH >12 w/NaOH | |
| Tot. Phosphate | 365.2 | 28 days | 4 degrees C & pH <2 w/H2SO4 | 6.13.W |
| Fluoride | 300 | 28 days | 4 degrees C | Reviewer /Date |
| Nitrite | 354.1 | 48 hours | 4 degrees C | |
| ortho-Phosphate | 365.1 | 48 hours | 4 degrees C | |
| Tot. Organic Carbon | 415.1 | 28 days | 4 degrees C & pH <2 w/H2SO4 | |
| Dis. Organic Carbon | 415.1 | 28 days | 4 degrees C & pH <2 w/H2SO4 | |
| Hardness | 130.1 | 180 days | 4 degrees C & pH <2 w/H2SO4 | |
| Ammonia | | 28 days | 4 degrees C & pH <2 w/H2SO4 | |
| BOD/CBOD | | 2 days | 4 degrees C | |
| | | | | Wqwk98.xls |

II WATER QUALITY PARAMETERS WORKSHEET--CALIBRATIONS

| | | MATRIX: _ | Was | lo | _ | BATCH: | K2103271 | |
|---------------|-------------------|----------------|------------|--------------------|---------------|---------------|--------------------|-------------|
| List all para | meters which d | lid not meet t | he percent | recovery for o | continuina or | initial calib | ration. | |
| ICV | T | | | T | | | | |
| CCV | ANALYTE | FOUND | TRUE | % R | ACTION | SAN | IPLES AFFECTED | |
| | | | | | | | | |
| ECV'S | CI | | | 98.98 96 | None | Win | 85-1159. | |
| | Ammona | | | 98,100 | 4. | · | | |
| NAJ | on Nito Nature | | | 103,107,103 | 4 | | | |
| | S | | | 102,02,02 | | Į | | |
| | TPlas | | | 100,100 | | J | , | |
| | | | | | | | | |
| | | | | | | | | · |
| | 793/705- | gravine | ic / | | | | | |
| | | 4 | | | | | | |
| | Conductivity | Reading | | | | | | |
| | PH | 7/ | | , | | | | |
| | | | | | | | · | |
| | Biomorate/ | 1 7.1 | idion) | | | | | |
| | 70 - 30 - 70 | 7 7 7 | 100,00 | | | | | |
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| | · | | | | | | | |
| 1 Was a CC | CV run every 10 | samples? | Yes |) No | | | | |
| | correct number | | | | hrate the inc | taiment? | Yes No | |
| | al calibration co | | | | (Yes) | | NA 7 Phos = 1.000/ | |
| | affected analyte | | | 0.330 ! | (Tes) | 140 | Cl = 0.998V | |
| COMMENTS | | s and sampi | | | | | S= 0.998V | |
| COMMENTS | <u>'</u> | | | | | | | |
| | Vote : Coc | la Zana | : h.9% | · Outside | 4±2% | - | | |
| | | | | | | t | · | |
| 1. If any ana | lyte does not m | | | | w the action | is Delow. | | |
| | | <=50 | 51-84 | RECOVERY 85-115 | , >≈116 | | | |
| Positive Res | ults | <=50 R | 31-04 J | 33-113 | J -110 | | . • | |
| Non-detects | wit.d | R | UJ | v | v | | | |
| | | | | | -111 | Al 1 A | | |

- 2. If the minimum number of standards were not used for initial calibration or the instrument was not calibrated daily and each time the instrument was setup, qualify the data as Rejected (R).
- 3. If the correlation coefficient was less than 0.995, qualify positive results as estimated (J) and non-detects as estimated and undetected (UJ).

| 111 | WATER | QUALITY F | PARAMETERS | WORKSHEET | -BLANKS |
|-----|-------|-----------|------------|-----------|---------|
| | | | | | |

| | | MATRIX: | Water | BATCH: _ | K2103271 |
|--------------------|----------------------|------------------------|-----------------|--------------------------|-----------------------|
| List the largest p | ositive and negative | /e blank result >= MD | L below. Use s | eparate worksheets for s | oil and water blanks. |
| ICB CCB MB | ANALYSIS | BLANK CONCENTRATION | ACTION | SAMPLES AFFEC | |
| MB | Condy | ND | None | No hita | |
| | Alkal. | | | · | |
| | CECO3 all | MD, MD, MD | | · | · |
| | Ammonia | av | | | |
| | NO2-NO3 | NP | | | |
| _ | Phos 7 | ND | | | |
| | 705 | | | | |
| | <i>7</i> 55 | | | | |
| | S | | | | |
| | Cl | | <u> </u> | | |
| | | | | | |
| | | | | | |
| CCB's | C(| ND / | | | |
| | Ammonia | ND / | | | |
| | Nitake Nitote | ND / | | | |
| | S | NDY | | · | |
| | 7. Phos | NDV | | | |
| | | | | | |
| | | | | | |
| · 1 | | | | | |
| 1. Was a blank ru | un every 10 sample | es? (Yes) N | 0 | | |
| COMMENTS | | · | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Actions:

- 1. If |Blank| < MDL, no action is taken.
- 2. If Blank > = MDL, then all sample results > = MDL and < 5*Blank are non-detected (U).
- 3. If Blank = < -MDL, all sample results > = MDL and < 5* |Blank| are estimated (J).
- 4. If Blank = < -MDL then all non-detected results are estimated (UJ).

IV WATER QUALITY PARAMETERS WORKSHEET--LAB CONTROL SAMPLES

| | | MATRIX: | Water | · · · · · · · · · · · · · · · · · · · | | BATCH: | K210 | 329 |
|------------------|--------------------------|----------------------|---|---------------------------------------|--|--|--|--------------|
| ANALYTE | TRUE | FOUND | % R | ACTION | 1 | SAMPLES AFF | ECTED | |
| оН | | 1 | 99/100 | | A11 | | | ····· |
| Conduct | | | 941 | 1 | 7.11 | and Win | Lab 111 | himiB |
| Alkalinha | | 1 | 1021 | | | | <u> </u> | 7,,,,,, |
| Ammana | . •• , - — —— | - | 101/ | | | | | |
| NO. NO. | | | 961 | | | | ······································ | |
| 7. Phos | | | 100V | - - | | · · · · · · · · · · · · · · · · · · · | | ····· |
| 709 | | | 99/ | | | | | |
| 755 | | | 941 | | | | | |
| 3 | | | 1001 | | | | | |
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| | | | 112 | | | <u> </u> | | |
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| COMMENTS | | <u> </u> | <u></u> | | <u> </u> | | | |
| COMMENTS | <u> </u> | · <u> ·· ·· ·· ·</u> | | | | | | |
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| | ··- <u>-</u> | | | | | ********** | | |
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| Actions: | | | | | | ······································ | | |
| | | | | | | | | |
| | | | PERCENT R | ECOVERY | | | | |
| AQUEOUS LCS | | <50% | 51-79% | 60-120% | >120% | | | |
| Positive results | | R | J | V | · J | | | |
| Non-detects | | R | UJ | V | V | , | | |
| | | | Lower | | | | | |
| SOLID LCS | | | Control Limit | Control Limit | Upper Con | trol Limit | | |
| Positive results | i | | J | V | J | | | |
| Non-detects | | | UJ | ٧ | ٧ | ÷ | | |
| | | | | | • | | | |

V WATER QUALITY PARAMETERS WORKSHEET--DUPLICATES

| | | MATRIX: | Wate | | | BATCH: K2103271 |
|-------------------------------------|---------------|-----------------|------------|-------------|--------|-------------------|
| List all samples th | at do not mee | et % difference | or CRDL cr | iteria. | | |
| SAMPLE | | SAMPLE | DUP. | | | |
| ID | ANALYTE | VALUE | VALUE | RPD | ACTION | SAMPLES AFFECTED |
| 01- E2-SW-003-0 | AIL | | | 42 all | None | All Win critery |
| OOI DUP | | | | 4 | | <u> </u> |
| | | | | | | |
| | 1 | | | | | |
| Field dup | - Wades | Dup | | | | |
| | 01- E25Wa | 23 /- 303 | | | Sols | H |
| ρĦ | 7.74 | 7.77 | 11/2 | | -005- | 7.60 |
| Condoctivity | 1550 | 1560 | 41% | 7 | -0305= | 7.44 29. |
| Albal. | 218 | 216 | 419. | | | |
| Bicab | 218 | 216 | 419. | | -007 | = 7.73 |
| Corbon | NA | ND | 0 | | 307 | -7.66 419. |
| Ammoni h | an | ND | 0 / | , | | |
| NO3.NO2 | ND | ND | 0 | All Vin co | ilera | |
| 7 Phos | as | 0.03 | 0 | | | Al) Field dup "in |
| 705 | 1150 | 4150 1100 | 49. | | | critera |
| 788 | ND | NΔ | 0 | | | |
| 3. | 531 | 536 | 419. | | | |
| CI- | 70.1 | 82.0 | 59 | | | |
| | | | | | | |
| · | | <u></u> | | | | |
| Was a duplicate | sample anal | yzed every 20 | samples? | Yes | No | |
| 2. Was a Field Bla | nk used for d | uplicate analy: | ses? | Yes No | ક્ | |
| COMMENTS | | | | | | |
| | | | | | | · |
| | | | | | | |
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| | | | | | | |

Actions:

AQUEOUS:

If both sample values > 5*PQL estimate (J) all positive results and estimate (UJ) all non-detects if RPD is >+/- 20%.

If either sample value < 5*PQL and the difference between the duplicate and the original is > PQL then estimate (J) positive values and estimate (UJ) non-detects.

SOLID:

If both sample values > 5°PQL estimate (J) all positive results and estimate (UJ) all non-detects if RPD is > +/- 35%. If either sample value < 5°PQL and the difference between the duplicate and the original is > 2X PQL then estimate (J) positive values and estimate (UJ) non-detects.

VI WATER QUALITY PARAMETERS WORKSHEET--MATRIX SPIKE

| | | | MATRIX: _ | Wa | fer | _ | | BATCH: | K2103271 |
|---------------------|----------------|----------------------------|------------------|----------------|-------------|--------------------------|----------|---------------------------------------|---------------------------------------|
| Not required for 1 | itrimetric ana | lyses. | | | | | | | |
| SAMPLE ID | ANALYTE | SPIKED SAMPLE RESULT | SAMPLE RESULT | SPIKE ADDED | % R | ACTI | ON | SAMPLES AF | FECTED |
| 01-02-5W-003-0 | Anmonula | | | | 829 | Λ, | bnp | · All m/s | critera |
| OOIMS | No.No. | | | | 105 | | | | |
| | Phas T. | | | | 98/ | | | | |
| | S | | | | 110 | $-\!\!\!\!\!+$ | | | |
| | CI | | | | 110/ | 4 | _ | | |
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| | | 1 | | | | | | · | |
| 1. Was a matrix s | | | | y of once e | very 20 san | nples or | per t | | |
| 2. Was a field blac | nk used for sp | oike analysis | ? | | | | | Yes | N ₀ |
| COMMENTS | | | | | | | | ****** | |
| | | | | | | - , · · · - - | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| Actions: | | | | | | | | , | |
| 1. If the sample co | | | | | | or more | e, no | action is taken. | |
| 2. If any analyte d | oes not meet | ine % K chi | | Percent Rec | | | | | |

30-74% (75-125%)

J

UJ

>125%

٧

<30%

R

Positive Results

Non-detects

VII WATER QUALITY PARAMETERS WORKSHEET -- SAMPLE RESULT VERIFICATION

| | MATRIX: | Wode | BATCH: | K210327) |
|--|------------------------|--|---------------------------------------|---------------------------------------|
| Describe any raw data anomali | es (i.e., baseline sl | hifts, negative absorban | ces, legibility, etc.) | |
| | | _ | | |
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| | | • | | <u>-</u> |
| | | | | |
| 2. Describe any transcription or ca | lculation errors. | | | |
| | | <u>, </u> | · | |
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| · | | · · · · · · · · · · · · · · · · · · · | | |
| 2. Do all secults fall within the polity | anta di sanca af tha i | instrument? Yes | No | |
| 3. Do all results fall within the calib | | instrument? Tes | INO | |
| If no, list all results outside calib | rated range. | | | - |
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| COMMENTS | | | | |
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Tabbed Page: Appendix B

Appendix B

| | - | ਤ | | | | | | UPCM | | | | | |
|------------------------|----------------|--|----------------------------|------------|--------------|---------|------------|-------------------|--------|--------|---|--------|-----------|
| Analyte | Sample ID | Method | Lab Val Result Rem Qual | Lab Rem | Oual Oual | 呈 | Sample ID | Method Result Rem | Result | Reg Es | 냁 | RPD | Usability |
| AF-BG-3: RF-BG-BG3_051 | | 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1 | | | I | | ではるるとのできる。 | | | | | | |
| AS TOTAL (mg/Kg) | 01-E2-RF-005-2 | 9050 | 6.4 | \vdash | \vdash | 9.0 | RF-8G-8G3 | 6010 | | | 2 | 29.33% | |
| H+ (mo//L) | 01-E2-AF-003-2 | 8045C | 1.51E-07 | | \vdash | 1.0E-14 | | | | Ŀ | | | |
| PB TOTAL (mg/Kg) | 01-E2-RF-009-2 | 0209 | | | T | 90.0 | RF-8G-8G3 | 9010 | Z | | 5 | 10.75% | |
| TOTAL SOLIDS (PERCENT) | 01-E2-RF-009-2 | 160.3M | 6,49 | 1 | \dagger | | | | | ŀ | - | | |

NC - Not Calculated because one or both concentrations are non detects.
mg/Kg - Milligrams per kilogram.
mg/L - Milligrams per liter.
S - Soll.
W - Water.
RPD - Relative Percent Difference.

All samples with Usability column left blank have been determined acceptable.
Samples with RPDs above 50% and acceptable were determined acceptable based on the 5x rule.
Shaded results are the higher of the two results.
The calculation used to determine pH is: pH = -log([H+]).
Hu. Pepording Limit.
Val Onal - Validator qualifier(s).
Lab Rem - Lab qualifier(s). CDM Federal Programs Corporation

M:0280-RACS0088-RichardsonFlats/Database/CurrantWay2001tmport.mdb rptSplitComparisonMay2001_01 07-18-01

| | | CDV | S | | | | | UPCM | | | | | |
|------------------------|----------------|--------|----------------------------|---------------------|---------------|---------|--|-------------------|--------|-------|---|--------|-----------|
| Analyte | Sample ID | Method | Lab Val Result Rem Qual | Lab Val Rem Qual | Val | 7 | Sample ID | Method Result Rem | Result | Reg P | 뉱 | RPD | Usability |
| RF-BG-4: RF-BG-BG4 051 | 10050 | | | | ė | | The state of the s | | | | | | |
| AS TOTAL (mg/kg) | 01-E2-RF-004-2 | 0209 | 4.4 | | - | 9.0 | RF-8G-8G4 | 0109 | | | 2 | 70.59% | |
| H+ (mo/A.) | 01-E2-RF-004-2 | 25/08 | 8.32E-06 | T | | 1.0E-14 | • | | | Ŀ | | | |
| PB TOTAL (mg/Kg) | 01-E2-RF-004-2 | 9020 | | | | 90.0 | RF-8G-8G4 | 6010 | 82 | | 5 | 5.45% | |
| TOTAL SOLIDS (PERCENT) | 01-E2-RF-004-2 | 160.3M | 83.8 | T | T | | | | | ŀ | | | |
| | | | | | | | | | | | | | |

NC - Not Catoulated because one or both concentrations are non detects.
mg/Kg - Milligrams per kilogram.
mg/L - Milligrams per libar.
S - Soil.
W - Water.
RPD - Relative Percent Difference.

All samples with Usability column left blank have been determined acceptable.
Samples with RDs above 50% and acceptable were determined acceptable based on the 5x rule.
Standed results are the higher of the two results.
pH has been represented as the hydrogen fon (in mol/L) to compare concentration RPDs. The calculation used to determine pH is: pH = -log([H+]).
HL. -Reporting Limit.
Yel Class - Validation qualifier(s).
Lab Rem - Lab qualifier(s).

CDM Federal Programs Corporation

M:\2280-RAC8\088-RichardsonFlats\Database\Current\May2001Import.mdb rptSplitComparlsonMay2001_01 07-18-01

Appendix B May 2001 Split Sample Comparison Richardson Flat, Park City, Utah

| | | CD | 3 | | | | UPCM | | | | | |
|-------------------------|----------------------|--------|----------|-----------------|--------------------|--|--|-------------------|-----|---|--------|-----------|
| Analyto | Sample ID | Method | Result | Result Rem Qual | P. P. | Sample ID | Method | Lab Result Rem | Lab | 岩 | RPD | Usability |
| T18: RF-OF-T18 1-4-0510 | A CAMP OF THE SECOND | | | のでは、 | THE REAL PROPERTY. | を と から できる | The state of the s | という | | | | , |
| AS TOTAL (mg/kg) | 9-200-JO-23-10 | 0200 | 5.6 | _ | 9.0 | RF-0F-71B 1-6" | 6010 | | | 2 | 58.41% | |
| H+ (moM.) | 01-E2-OF-002-6 | 9045C | 5.75E-08 | - | 1.0E-14 | | | | | | | |
| PB TOTAL (mg/kg) | 01-E2-OF-002-6 | 90209 | 33 | - | 90.0 | RF-0F-T18 1-6" | 6010 | | | 2 | 42.29% | |
| TOTAL SOLIDS (PERCENT) | 01-E2-OF-002-8 | 160.3M | 9.68 | | | | | | ŀ | | | |

NC - Not Calculated because one or both concentrations are non detects.

mg/k_o - Milligrams per kitogram.

mg/k - Milligrams per liter.
S - Solt.
W - Water.

RPD - Relative Percent Difference.

All samples with Usability colurn left blank have been determined acceptable. Samples with NPDs above 50% and acceptable were determined acceptable based on the 5x rule. Shaded results are the higher of the two results, put has been represented as the hydrogen for (in mol/L) to compare concentration RPDs. The calculation used to determine pht is: pH = -log([H+]). He Reporting Limit. Vet Qual - Vetidator qualifier(s).

CDM Federal Programs Corporation

M:\2280-RAC8\088-RichardsonFlats\Database\Current\May2001Import.mdb rptSplitComparisonMay2001_01 07-18-01

| | | CD | ≆ | | | | | UPCM | | | | | |
|---------------------------------------|----------------|--------------|----------|------|-------------|---------|----------------|--------|------------|------|----|----------|---------------------------|
| Analyte | Sample ID | Method | Result | Je P | Val Qual | 표 | Sample ID | Method | Result Rem | de E | ā | RPD | Usability |
| TIC: RF-OF-TIC 1-6" (\$102801 1865) | | ALC: NO. | | K. | 湯湯 | | | 1 | | | | | |
| AG TOTAL (mg/Kg) | 01-E2-OF-003-6 | 9020 | 75.0 | | | 0.02 | RF-OF-TIC 1-6" | 6010 | | 2 | 2 | NC NC | |
| AS TOTAL (mg/Kg) | 01-E2-OF-003-6 | 020 8 | | | | 9.6 | RF-OF-T1C 1-6* | 6010 | | | s | 76.92% | |
| CD TOTAL (mg/Kg) | 01-E2-OF-003-6 | 9020 | 70 | | | 90.0 | RF-OF-T1C 1-6" | 6010 | | | s. | 85.71% | |
| CR TOTAL (mg/Kg) | 01-E2-OF-003-8 | 0209 | 19.9 | | | 92 | RF-OF-T1C 1-6" | 6010 | | | S | 5.38% | |
| CU TOTAL (mg/Kg) | 01-E2-OF-003-6 | 9020 | 81 | | Γ | 0.1 | RF-OF-TIC 1-6" | 6010 | | | 5 | 32.56% | |
| H+ (moVL) | 01-E2-OF-003-6 | 9045C | 2.82E-06 | | | 1.0E-14 | | | · | Ŀ | | | |
| PB TOTAL (mg/Kg) | 01-E2-OF-003-6 | 0209 | 30.8 | | | 90.0 | RF-0F-T1C 1-6" | 6010 | | | 2 | 22.67% | Unacceptable - RPD |
| SB TOTAL (mg/kg) | 01-E2-OF-003-6 | 6020 | 0.45 | z | - | 90.0 | | | | Ŀ | | [. | |
| SE TOTAL (mg/kg) | 01-E2-OF-003-6 | 9050 | = | 3 | | 12 | RF-0F-T1C 1-6" | 6010 | | 3 | S | Ş | |
| TOTAL SOLIDS (PERCENT) | 01-E2-OF-003-6 | 160.3M | 88.7 | | | | | - | | Ŀ | | | |
| ZN TOTAL (mg/Kg) | 01-E2-OF-003-6 | 6020 | 79.3 | | 7 | 9.0 | RF-OF-T1C 1-6" | 6010 | | | 5 | 70.16% | 70.16% Unacceptable - RPD |
| | | | | | | | | 1 | | | | | |

NC - Not Calculated because one or both concentrations are non detects.

mg/Kg - Milligrams per kitogram.

mg/L - Milligrams per liter.

S - Soil.

W - Water.

RPD - Relative Percent Difference.

Samples with RPDs above 50% and acceptable were determined acceptable based on the 5x rule.
Shaded results are the higher of the two results.
Shaded results are the higher of the two results.
Phy has been represented as the hydrogen for (in mol/L) to compare concentration RPDs. The calculation used to determine pH is: pH = -log([H+]). RI. - Reporting Lint.
Val Oual - Validator qualitier(s).
Lab Rem - Lab qualifier(s).

CDM Federal Programs Corporation

M-12280-RACBI088-RichardsonFlats/Database/Current/May2001/mport.mdb rptSplt/ComparisonMay2001_01 07-18-01

| | | CD | ¥ | | | | | UPCM | | | | | | Γ |
|----------------------------|-----------------|--------------|-----------------|---------------------|-------------|---------|--|--------------|-------------------|------------|---|--------|-----------|---|
| Analyte | Sample ID | Method | Result Rem Qual | Lab Val Rom Qual | Val Sugi | 표 | Sample ID | Method | Lab Result Rem | Lab Rem | 귵 | RPD | Usability | |
| TID: RF-OF-TID-0-2" 051020 | MILITARY TO THE | | | 医 | | | 三年 三年 三年 三年 五年 | The state of | 1 | | | | | 1 |
| AS TOTAL (mg/Kg) | 01-E2-OF-004-2 | 0200 | 5.7 | | \vdash | 9.0 | RF-0F-T1D 0-2" | 6010 | | | 5 | 35.97% | | Г |
| 9 | 01-E2-OF-004-2 | 90450 | 3.02E-07 | | \vdash | 1.0E-14 | | | | ŀ | - | | | Т |
| PB TOTAL (mg/kg) 0 | 01-E2-OF-004-2 | 020 8 | 82.3 | - | \vdash | 90.0 | RF-OF-T1D 0-2" | 9010 | | | 2 | 5.55% | | T |
| _ | 01-E2-OF-004-2 | 160.34 | 2 | | | | | | ٠ | Ŀ | | | | Т |
| TOTAL SOLIDS (PERCENT) | 11-E2-OF-004-2 | 160.34 | 2 | \exists | \dashv | | | | • | • | • | | | |

NC - Not Calculated because one or both concentrations are non detects.
mg/Kq - Milligrams per kilogram.
mg/L - Milligrams per liter.
S - Soil.
W - Water.
RPD - Relative Percent Ofference. All samples with Usability column left blank have been determined acceptable.
Samples with RPDs above 50% and acceptable were determined acceptable based on the 5x rule.
Samples with RPDs above 50% and acceptable were determined acceptable based on the 5x rule.
Safed resultis are the higher of the two results.
pH has been represented as the hydrogen for (in mot/L) to compare concentration RPDs. The calculation used to determine pH is: pH = -log([H+t]).
RL - Reporting Linft.
Val Qual - Validator qualitier(s).

M:C280-RAC8088-RichardsonFlats\Database\Current\May2001Import.mdb rptSplitComparisonMay2001_01 07-18-01 CDM Federal Programs Corporation

| | | CD | | | | | UPCM | | | | | |
|-------------------------------|----------------|--------|---------------------|---------|-------------|--------------------|-------------------|--------|-------|-----|--------|---------------------------|
| | | | | Lab Val | <u>le</u> ; | Cl elumes | Method Result Rem | Result | Red E | 긡 | RPD | Usability |
| Analyte | Sample ID | Method | Result Hem Cuar | HOM I | 1.3 | | | では、 | 1 | r 4 | | |
| TIF: RF-OF-TIF 0-2" 0510 | のでは、一般である。 | | | | 90 | ÷Г | | | - | s | 63.47% | |
| AS TOTAL (mg/Kg) | 01-E2-OF-006-2 | BUCO | , | + | 7 00 7 | | | ٠ | | | • | |
| H+ (mol/L) | 01-E2-OF-006-2 | 9045C | 8.71E-06 | 1 | 1 | 20 0 171 0 02 | 6010 | | | 9 | 92.86% | 92.86% Unacceptable - RPD |
| PR TOTAl (mo/Ka) | 01-E2-OF-006-2 | 6020 | 28.9 | | 90:0 | 0.06 RF-OF-11F G-2 | | | 1 | 1 | ŀ | |
| TOTAL SOLIDS (PERCENT) | 01-E2-OF-006-2 | 160.3M | 88.7 | | | • | | | | | | |
| וסואר פסרווציו (ו מוויסר ווי) | | | | | | | | | | | | |

NC - Not Calculated because one or both concentrations are non detects.

rrg/Kg - Milligrams per kilogram.

rrg/L - Milligrams per liter.

\$ - Soil.

W - Water.

RPD - Relative Percent Difference.

All samples with Usability column left blank have been determined acceptable.

Samples with RPDs above 50% and acceptable were determined acceptable based on the 5x rute.

Shaded results are the higher of the two results.

pH has been represented as the hydrogen ion (in moUL) to compare concentration RPDs. The calculation used to determine pH is: pH = Hopfill+!).

Vel Cuel - Validator qualitier(s).

Lab Rem - Lab qualitier(s).

CDM Federal Programs Corporation

M:S280-RAC9098-RichardsonFlats/Databasa/Current/May2001tmport.mdb mtSplitComparisonMay2001_01 07-18-01

| | | Nao | * | | | | | ОРСМ | | | | | |
|---------------------------|----------------|-------------------|-----------------|---------------------|----------|--|----------------|-------------------|--------|------------|---|---------|----------------------------|
| Analyte | Sample ID | Method | Result Rem Qual | Lab Vai Rem Quai | 1 | 굺 | Sample ID | Method Result Rem | Result | Lab Rem | 岩 | RPD | Usability |
| T2A: RF-OF-T2A 0-2" 05092 | 2001 | The second second | 4 | | | A STATE OF THE STA | | | | | | | |
| AS TOTAL (mg/kg) | 01-E2-OF-008-6 | 0709 | 11.3 | | - | 9.6 | RF-OF-12A 0-2" | 6010 | | | 5 | 118.26% | 118.26% Unacceptable - RPD |
| H+ (mol/L.) | 01-E2-OF-008-6 | 9045C | 9.77E-09 | | T | 1.06-14 | | | | ŀ | - | [. | |
| PB TOTAL (mg/kg) | 01-E2-OF-008-6 | 0209 | 136 | | | 90.0 | RF-OF-T2A 0-2" | 6010 | | | 2 | 120.82% | 120.82% Unacceptable - RPD |
| TOTAL SOLIDS (PERCENT) | 01-E2-OF-009-6 | 160.384 | æ | | \vdash | | | | , | • | | | |

NC - Not Calculated because one or both concentrations are non detects, mo/kg - Milligrams per kitogram.
mo/k - Milligrams per liter.
S - Soil.
W - Water.
HPD - Relative Percent Difference. All samples with Usability column left blank have been determined acceptable.
Samples with RPDs above 50% and acceptable were determined acceptable based on the 5x rule.
Shaded results are the higher of the two results.
Put has been represented as the hydrogen ion (in mol/L) to compare concentration RPDs. The calculation used to determine pH is: pH = -log([H+]).
RL - Reporting Limit.
Val Chai - Validator qualitier(s).
Lab Rem - Lab qualitier(s).

CDM Federal Programs Corporation

Mt3280-RAC6/088-RichardsonFlats/Dafabase/Current/May2001/mport.mdb rptSplitCompartsonMay2001_01 07-18-01

| | ; | Ö | ≥ | | | | | UPCM | | | | | _ |
|---------------------------|----------------|--------|----------------------------|---------------------|----------|---------|--------------------|-------------------|--------|-----|---|----------|---------------------------|
| Analyte | Sample ID | Method | Lab Val Result Rem Qual | Lab Val Rem Qual | Vai | 7 | Sample ID | Method Result Rem | Result | Rem | 긡 | RPD | Usability |
| T2C: RF-OF-T2C 0-2" 05092 | 2001 | | | À | | | | | | | | | |
| AS TOTAL (mg/kg) | 01-E2-OF-011-2 | 0209 | 76.3 | | \vdash | 0.5 | 0.5 RF-OF-T2C 0-2" | 9010 | | | 5 | 68.62% | 68.62% Unacceptable - RPD |
| H+ (moM.) | 01-E2-OF-011-2 | 9045C | 1.78E-08 | | T | 1.0E-14 | | [· | | ŀ | | ļ. | |
| PB TOTAL (mg/kg) | 01-E2-OF-011-2 | 0209 | 2140 | | 1 | = | RF-OF-T2C 0-2" | 6010 | | | 2 | 62.22% | 62.22% Unacceptable - RPD |
| TOTAL SOLIDS (PERCENT) | 01-E2-OF-011-2 | 160.3M | 76 | | 1 | | | | | ŀ | 1 | <u> </u> | |

NC - Not Calculated because one or both concentrations are non detacts, mg/kg - Milligrams per kilogram.
mg/L - Milligrams per liter.
S - Soll.
W - Water.
RPD - Relative Pencent Difference.

All samples with Usability column left blank have been determined acceptable.
Samples with RPbs above 50% and acceptable were determined acceptable based on the 5x rule.
Shaded results are the higher of the two results.

pH has been represented as the hydrogen for (in molt.) to compare concentration RPDs. The calculation used to determine pH is: pH = -log([H+]).

H. Reporting Limit.

PLust Variation qualitier(s).

Lab Rem - Lab qualifier(s).

M13280-RAC81088-RichardsonFlatsDatabasel/CurentWay2001Import.mdb rptSplitComparisonMay2001_01 07-18-01 **CDM** Federal Programs Corporation

| | | CDN | 3 | |] | | | UPCM | | | | | |
|------------------------------|----------------|--------|-----------------|--------------------|-------------|-------------|--|--------|-------------------|-------|----|----------|--------------------|
| Analyte | Sample ID | Method | Result Rem Qual | Lab Val Rem Qua | Val Qual | 균 | Sample ID | Method | Lab Result Rem | Hed B | 7 | RPD | Usability |
| T2H: RF-OF-T2H 0-2" 05092001 | 3200 - S | | | の記事 | 7.4 | A Section 1 | A STATE OF THE PARTY OF THE PAR | | 1000 | | | | |
| AG TOTAL (mg/Kg) | 01-E2-OF-016-2 | 0208 | 0.54 | | | 0.02 | RF-OF-T2H 0-2" | 6010 | | 3 | 2 | 2 | |
| AS TOTAL (mg/Kg) | 01-E2-OF-016-2 | 0209 | 6.1 | | T | 9.6 | RF-OF-T2H 0-2" | 6010 | | | 2 | 38.41% | |
| CD TOTAL (mg/Kg) | 01-E2-OF-016-2 | 9020 | 0.62 | | - | 90.0 | RF-OF-T2H 0-2" | 6010 | | | S. | 46.91% | |
| CR TOTAL (mp/Kg) | 01-E2-OF-016-2 | 9020 | 17.7 | | | 0.2 | RF-OF-T2H 0-2" | 6010 | | | 2 | 54.62% U | Unacceptable - RPD |
| CU TOTAL (mg/Kg) | 01-E2-OF-016-2 | 9020 | 20.9 | | T | 0.1 | RF-OF-T2H 0-2" | 6010 | | | 2 | 21.75% | |
| H+ (mol/L.) | 01-E2-OF-016-2 | 9045C | 2.19E-07 | Γ | | 1.06-14 | | | | ŀ | , | | |
| PB TOTAL (mg/Kg) | 01-E2-OF-016-2 | 9020 | | | T | 90.0 | RF-OF-T2H 0.2" | 6010 | 29 | | 9 | 1.28% | |
| SB TOTAL (mg/Kg) | 01-E2-OF-016-2 | 9050 | 0.89 | Z | ļ. | 90.0 | | | | Ŀ | | ŀ | |
| SE TOTAL (mg/Kg) | 01-E2-OF-016-2 | 9020 | 1.2 | Э | T | 1.2 | RF-OF-T2H 0-2" | 6010 | | 5 | 5 | ş | |
| TOTAL SOLIDS (PERCENT) | 01-E2-OF-016-2 | 160.3M | 82.5 | | f | | | | | Ŀ | 1 | | |
| ZN TOTAL (mg/kg) | 01-E2-OF-016-2 | 9020 | 1.7 | | - | 9.0 | RF-OF-T2H 0-2" | 6010 | | | 5 | 23.97% | |
| | | | | | | | | | | | | | |

NC - Not Catourlated because one or both concentrations are non detects.
mg/kg - Milligrams per kilogram.
mg/L - Milligrams per filer.
S - Soil.
W - Water.
RPD - Relative Percent Difference. All samples with Usability column left blank have been determined acceptable. Samples with RPDs above 50% and acceptable were determined acceptable based on the 5x rule. Stander settles are the higher of the two results.

pit has been represented as the hydrogen fon (in molf.) to compare concentration RPDs. The calculation used to determine pH is: pH = -lop([H+]). RL - Reporting Limit.

Plous! - Validator qualitier(s).

Lab Rem - Lab qualitier(s).

CDM Federal Programs Corporation

M:0280-RAC8/088-RichardsonFlats\Database\Current\May2001Import.mdb rpsSplitComparisonMay2001_01 07-18-01

| | | Ö | ≥ | | | | | UPCM | | | | | |
|---------------------------------|----------------|--------|----------|------------|----------|---------|----------------|--------|-------------------|-----|----------|----------|--|
| Analyte | Sample ID | Method | Result | Lab Rem | Val | 교 | Sample ID | Method | Lab Result Rem | Rem | 표 | RPD | Usability |
| T2H: RF-OF-T2H 1.6" 05092008 75 | 32008 | | | | | R. | | | 13 | | | | |
| AG TOTAL (mg/Kg) | 01-E2-OF-016-6 | 9050 | 27.0 | | \vdash | 0.02 | RF-OF-T2H 1-6" | 6010 | | 3 | 5 | Ş | |
| AS TOTAL (mg/kg) | 01-E2-OF-016-6 | 9050 | 5.5 | | | 9.6 | RF-OF-T2H 1-6" | 6010 | | | 2 | 24.00% | |
| CD TOTAL (mg/Kg) | 01-E2-OF-016-6 | 6020 | | | T | 90.0 | RF-OF-T2H 1-6" | 6010 | 0.5 | 3 | 8; | SK SK | |
| CR TOTAL (mg/Kg) | 01-E2-OF-018-8 | 6020 | 22.3 | | T | 0.2 | RF-OF-T2H 1-6" | 6010 | | | 5 | 29.45% | |
| CU TOTAL (mg/Kg) | 01-E2-OF-018-6 | 6020 | | | T | 0.1 | RF-OF-12H 1-8" | 6010 | 82 | | 2 | 3.57% | |
| H+ (mo/L) | 01-E2-OF-016-6 | 9045C | 1.45E-07 | | | 1.0E-14 | | | | Ŀ | - | - | |
| PB TOTAL (mg/Kg) | 01-E2-OF-016-6 | 8020 | | | T | 90.0 | RF-OF-T2H 1-6* | 8010 | ನ | | 2 | 54.55% | Unacceptable - RPD |
| SB TOTAL (mg/Kg) | 01-E2-OF-016-6 | 6020 | 0.63 | z | - | 90.0 | | | | Ŀ | | | |
| SE TOTAL (mg/Kg) | 01-E2-OF-016-6 | 6020 | 1.2 | 2 | T | 12 | RF-OF-T2H 1-6" | 6010 | | 3 | 5 | 2 | |
| TOTAL SOLIDS (PERCENT) | 01-E2-OF-016-6 | 160.3M | 81,6 | | | | | | | Ŀ | <u>.</u> | | |
| ZN TOTAL (mg/Kg) | 01-E2-OF-016-6 | 9050 | | | - | 9.6 | RF-OF-T2H 1-6" | 6010 | 79 | | 5 | 14.55% | |
| | | | | | | | | | | | | | ************************************** |

NC - Not Catoulated because one or both concentrations are non detects.
mg/Kg - Milligrams per kiter.
mg/L - Milligrams per kiter.
S - Soil.
W - Water.
HPD - Relative Percent Difference. All samples with Usability column left blank have been determined acceptable.
Samples with RPDs above 50% and acceptable were determined acceptable based on the fx rule.
Shaded results are the higher of the two results.
pH has been represented as the hydrogen ion (in mol/L) to compare concentration RPDs. The calculation used to determine pH is: pH = -log([H+]).
RL -Reporting Limit.
Yet Oual - Validator qualifier(s).
Lab Rem - Lab qualifier(s).

CDM Federal Programs Corporation

M:\2280-RAC8\088-RichardsonFlats\Databasa\Current\May2001 Import.mdb rptSplitComparisonMay2001_01 07-18-01

| | | CDN | = | | | | UPCM | | | | - | |
|--------------------------|----------------|--------|----------|-----------------|------------|--|--------------------|-------------------|------------|---|--------|-----------|
| Analyte | Sample ID | Method | Result | Result Rem Qual | <u>a a</u> | Sample ID | Method | Lab Result Rem | Lab Rem | 료 | RPD | Usability |
| T3A: RF-OF-T3A 0.2" 0509 | 2001 | 地名。自治 | 1 | A 450 | | 1000年間の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の | A. The Wall of the | | | | | |
| AS TOTAL (mg/Kg) | 01-E2-OF-019-2 | 6020 | 6.3 | | 9.0 | RF-OF-T3A 0-2" | 6010 | | | 5 | 33.11% | |
| H+ (mol/L) | 01-E2-OF-019-2 | 304SC | 1.74E-07 | _ | 1.0E-14 | | | | | | - | |
| PB TOTAL (mg/kg) | 01-E2-OF-019-2 | 9020 | | | 90.0 | 0.06 RF-OF-T3A 0-2" | 6010 | æ | | 2 | 0.52% | |
| TOTAL SOLIDS (PERCENT) | 01-E2-OF-019-2 | 160.3M | 68.7 | - | | | , | · | ŀ | ŀ | | |

NC · Not Calculated because one or both concentrations are non detects. mg/Kg - Milligrams per kilogram mg/L - Milligrams per liter.

S - Soll. W - Water. RPD - Relative Percent Difference

All samples with Usability column left blank have been determined acceptable.

Samples with RPDs above 50% and acceptable were determined acceptable based on the 5x rule.

Shaded results are the higher of the two results.

Phy has bean represented as the hydrogen ion (in mol/L) to compare concentration RPDs. The calculation used to determine pH is: pH = -log([H+]). Rt. - Reporting Urnit.

Val Qual - Validator qualifier(s).

Lab qualifier(s).

CDM Federal Programs Corporation

M:\2280-RAC8\088-RichardsonFlats\Database\Current\May2001Import.mdb rptSplitComparisonMay2001_01 07-18-01

| | | CDM | 3 | | | | | UPCM | | | | | |
|-------------------------------|----------------|-----------|-----------------|--------------------|--------|---------|----------------|--------|------------|------------|-----|----------|-----------|
| Analyte | Sample ID | Method | Result Rem Qual | Lab Val Rem Qua | Vai | 岩 | Sample ID | Method | Result Rem | Lab Rem | 뮵 | PP0 | Usability |
| T3B: RF-OF-T3B 1-8/ JOSC 2001 | 1 | | | | | | | | |]- | | | |
| AG TOTAL (mg/Kg) | 01-E2-OF-020-6 | 0209 | 1.98 | | - | 90.00 | RF-OF-T38 1-6" | 6010 | | 3 | 5 | ¥ | |
| AS TOTAL (mg/kg) | 01-E2-OF-020-8 | 9050 | 19.3 | Γ | T | 0.5 | RF-OF-738 1-6" | 6010 | | | 5 | 33.26% | |
| CD TOTAL (mg/Kg) | 01-E2-OF-020-6 | 9020 | 77 | | T | 90.0 | RF-OF-T3B 1-8" | 6010 | | | 35: | 13.33% | |
| CR TOTAL (mg/Kg) | 01-E2-OF-020-6 | 0238 8 | 16.6 | | \mid | 0.2 | RF-OF-T38 1-6" | 0.08 | | | 5 | 18.58% | |
| CU TOTAL (mg/Kg) | 01-E2-OF-020-6 | 0Z08 | 48.5 | Γ | 十 | 5 | RF-OF-T38 1-6" | 6010 | | | 5 | 32.03% | |
| H+ (mot/L) | 01-E2-OF-020-6 | 9045C | 3.09E-07 | | T | 1.0E-14 | | | | Ŀ | - | <u> </u> | |
| PB TOTAL (mg/kg) | 01-E2-OF-020-6 | 9029 | 360 | | 1 | 90.0 | RF-OF-T38 1-6" | 6010 | | | 5 | 42.62% | |
| SB TOTAL (mg/Kg) | 01-E2-OF-020-8 | 9050 | 9.25 | z | - | 90.0 | | | ŀ | ŀ | | | |
| SE TOTAL (mg/Kg) | 01-E2-OF-020-6 | 8020 | = | 3 | T | = | RF-OF-T3B 1-6* | 6010 | | Э | 5 | ¥ | |
| TOTAL SOLIDS (PERCENT) | 01-E2-OF-020-6 | 160.3M | 75.9 | | - | | | | | ŀ | | - | |
| ZN TOTAL (mg/Kg) | 01-E2-OF-020-8 | 6020 | 77.5 | Γ | - | 2.7 | RF-OF-T3B 1-6" | 6010 | | | 5 | 18.50% | |
| | | | | ١ | | | | | | | | | |

NC - Not Calculated because one or both concentrations are non detects, moVkg - Milligrams per kilogram. moVL - Milligrams per titler. S - Soil. W - Water. W - Water. RPD - Relative Percent Difference.

All samples with Usability column left blank have been determined acceptable.
Samples with RPDs above 50% and acceptable were determined acceptable based on the 5x rule.
Shaded results are the higher of the two results.
pH has been represented as the hydrogen ion (in mo/L) to compare concentration RPDs. The calcutation used to determine pH is: pH = -log([H+]).
RL - Reporting Limit.
Vel Cual - Validator qualifier(s).
Lab Rem - Lab qualifier(s).

CDM Federal Programs Corporation

NK-12280-RAC8/088-RichardsonFlats/Database/Current/May/2001/import.mdb rptSpiifComparison/May/2001_01 07-18-01

| | | Ö | ¥ | | | | | UPCM | | | | | |
|------------------------------|----------------|--------|----------------------------|--------------------|-----|---------|----------------|--------|------------|------------|-----|--------|---------------------------|
| Analyte | Sample ID | Method | Lab Val Result Rem Qual | Lab Val Rem Qua | Val | 7 | Sample ID | Method | Result Rem | Lab Rem | 出 | RPD | Usability |
| T3D: RF-OF-T3D 0-2"_05092001 | 100% | | |] | | | | | | | | | |
| AG TOTAL (mg/Kg) | 01-E2-OF-022-2 | 0209 | 0.52 | | T | 0.02 | RF-OF-T30 0-2* | 0109 | | 3 | 5 | Š | |
| AS TOTAL (mg/Kg) | 01-E2-OF-022-2 | 9020 | 4.2 | | | 9.6 | RF-OF-T30 0-2* | 6010 | | | 5 | 62.30% | |
| CD TOTAL (mg/Kg) | 01-E2-OF-022-2 | 9050 | 99.0 | | T | 90.0 | RF-OF-T3D 0-2" | 6010 | | | 35. | 40.96% | |
| CR TOTAL (mg/Kg) | 01-E2-OF-022-2 | 0209 | 17.6 | | T | 0.2 | RF-OF-T30 0-2" | 6010 | | | 5 | 12.77X | |
| CU TOTAL (mg/Kg) | 01-E2-OF-022-2 | 0209 | 25.8 | | | -0 | RF-0F-T30 0-2" | 0109 | | | 5 | 30.26% | |
| H+ (mol/L) | 01-E2-OF-022-2 | 9045C | 16-08 | | T | 1.0E-14 | | | • | ŀ | | ŀ | |
| PB TOTAL (mg/kg) | 01-E2-OF-022-2 | 9050 | 32.2 | | | 90.0 | RF-OF-T30 0-2* | 6010 | | | 2 | 77.57% | Unacceptable - RPD |
| SB TOTAL (mg/Kg) | 01-E2-OF-022-2 | 6020 | 1.05 | z | - | 90.0 | | | | ŀ | | [| |
| SE TOTAL (mg/Kg) | 01-E2-OF-022-2 | 9020 | 1,2 | 3 | | 1.2 | RF-OF-T3D 0-2" | 6010 | | 3 | 5 | Ş | |
| TOTAL SOLIDS (PERCENT) | 01-E2-OF-022-2 | 160.3M | 70.8 | | T | | | | | Ŀ | | | |
| ZN TOTAL (mg/kg) | 01-E2-OF-022-2 | 9050 | 98.3 | | - | 9.0 | RF-OF-T3D 0-2" | 6010 | | | 5 | 50.66% | 50.66% Unacceptable - RPD |
| | | | | | | | | | | | | | |

NC - Not Calculated because one or both concentrations are non detects. moKg - Milligrams per kilogram. moL - Milligrams per liter. S - Soil. W - Warer. RPD - Relative Percent Difference. All samples with Usability column left blank have been determined acceptable based on the fx rule.
Samples awin RPDs above 50% and acceptable were determined acceptable based on the fx rule.
Shaded results are the higher of the two results.
pit has been represented as the hydrogen fon (in mol/L) to compare concentration RPDs. The calcutation used to determine pit is: pit = -log([i++]).
All - Reporting Limit.
Vall Chait - Validator qualitier(s).
Lab Rem - Lab qualifier(s).

CDM Federal Programs Corporation

M:\2280-RAC8\088-RichardsonFlats\Database\Current\May2001Import.mdb mtSplitComparisonMay2001_01 07-18-01

| | | S | 3 | | | | UPCM | | | | | |
|-----------------------------|----------------|--------|----------|----------------------------|---------|---|-------------------|--------|------------|---|--------|-----------|
| Analyte | Sample ID | Method | Result | Lab Val Result Rem Qual | B. | . Sample ID | Method Result Rem | Result | Rem Rem | 岩 | RPD | Usability |
| T3F: RF-OF-T3F 1-6" 0509200 | 2001 | 7.00 | | | * 1 | 10 mg/mg/mg/mg/mg/mg/mg/mg/mg/mg/mg/mg/mg/m | | | | | | |
| AS TOTAL (mg/Kg) | 01-E2-OF-024-6 | 6020 | 3.1 | | 9.6 | RF-0F-T3F 1-6" | 6010 | | | 5 | 78.43% | |
| H+ (maVL) | 01-E2-OF-024-8 | 90450 | 1.55E-07 | | 1.0E-14 | | | | | | | |
| PB TOTAL (mg/Kg) | 01-E2-OF-024-6 | 9050 | 17.2 | L | 90.0 | RF-OF-T3F 1-6* | 9010 | | | 2 | 4.55% | |
| TOTAL SOLIDS (PERCENT) | 01-E2-OF-024-6 | 160.3M | 8 | | | | | | Ŀ | | | |

NO - Not Calculated because one or both concentrations are non detects.
mg/Kg - Milligrams per filter.
ng/L - Milligrams per filter.
S - Soll:
W - Water.
RPD - Relative Percent Difference.

All samples with Usability column left blank have been determined acceptable.
Samples with RPDs above 50% and acceptable were determined acceptable based on the 5x rule.
Shaded results are the higher of the two results.
Shaded results are the higher of the two results.
ph has been represented as the hydrogen ion (in mol/L) to compare concentration RPDs. The calculation used to determine pH is: pH = -log([H+]).
RL - Reporting Limit.
Val Qual - Validator qualifier(s).

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M:0280-RAC8088-RichardsonFlats\Database\Current\May2001Import.mdb rpiSplitComparisonMay2001_01 07-18-01

| | | СОМ | S | | | | | UPCM | | | | | |
|--------------------------|----------------|---------|-----------------|------------|---------------|---|---------------------------------------|-------------------|--------|---------|---|--------|---------------------------|
| Analyte | Sample ID | Method | Result Rem Qual | Lab Rem | | 긭 | Sample ID | Method Result Rem | Result | Rem Mem | 교 | RPD | Usability |
| 1E: RF-ON-1E 0-2" 050920 | 30 | | | | | - X - X - X - X - X - X - X - X - X - X | 一 一 一 一 一 一 一 一 一 一 一 一 一 一 一 一 一 一 一 | | | | 1 | | |
| AS TOTAL (mg/Kg) | 01-E2-ON-021-2 | 9050 | 9.6 | | - | 9.0 | AF-ON-1E 0-2" | 6010 | | | 2 | 68.46% | |
| | 01-E2-ON-021-2 | 904SC | 1.7E-08 | T | | 1.0E-14 | | | | | | | |
| PB TOTAL (mg/Kg) | 01-E2-ON-021-2 | 9050 | 148 | T | \vdash | 90.0 | RF-ON-1E 0-2" | 6010 | | | 2 | 77.69% | 77.69% Unacceptable - RPD |
| TOTAL SOLIDS (PERCENT) | 01-E2-ON-021-2 | 160.344 | 85.3 | \mid | \vdash | | | | | | |] | |

NC - Not Calculated because one or both concentrations are non detects.
mg/Kg - Milligrams per titler.
mg/L - Milligrams per titler.
S - Soil.
W - Water.
HPD - Relative Percent Difference. All samples with Usability column left blank have been determined acceptable.

Samples with RPDs above 50% and acceptable were determined acceptable based on the 5x rule.

Shaded results are the higher of the two results.

Put has been represented as the hydrogen fon (in mol/L) to compare concentration RPDs. The calculation used to determine pH is: pH = -log([H+]).

RL - Reporting Limit.

Val Qual - Validator qualifier(s).

Lab Rem - Lab qualifier(s).

CDM Federal Programs Corporation

M:V280-RAC8\088-RichardsonFlats\Database\Current\May2001Import.mdb rptSplitComparlsonMay2001_01 07-18-01

| | | 3 | 2 | | | | | UPCM | | | | | |
|----------------------------|----------------|--------|----------|---------|-------------|---------|--|--------|-------------------|-------|-------------|----------|-----------|
| Analyte | Sample ID | Method | Result | Reg Esp | Val Quai | দ | Sample ID | Method | Lab Result Rem | Red E | <u>۳</u> | RPD | Usability |
| 2H: RF-ON-2H 0-2" 05082001 | Of | | | 35.05 | | 9,12 | 一名 一 | | | | | | |
| AG TOTAL (mg/Kg) | 01-E2-ON-008-2 | 6020 | 0.21 | | - | 20.0 | RF-ON-2H 0-2" | 6010 | | 1 | 5 | 2 | |
| AS TOTAL (mg/Kg) | 01-E2-ON-006-2 | 0209 | 1.6 | Γ | - | 9.6 | RF-ON-2H 0-2" | 6010 | | 2 | 5 | ¥ | |
| CD TOTAL (mg/kg) | 01-E2-ON-006-2 | 6020 | 0.19 | | ┢ | 90.0 | RF-ON-2H 0-2" | 6010 | | 3 | 3 5: | 2 | |
| CR TOTAL (mg/kg) | 01-E2-ON-006-2 | 0209 | 13.3 | | T | 20 | RF-ON-2H 0-2" | 6010 | | | 2 | 53.44% | |
| CU TOTAL (mg/Kg) | 01-E2-ON-006-2 | 6020 | 9.6 | | \vdash | 0.1 | RF-ON-2H 0-2" | 6010 | | | 5 | 34.31% | |
| H+ (moM.) | 01-E2-ON-006-2 | 9045C | 5.25E-09 | | T | 1.0E-14 | | | | ŀ | | | |
| PB TOTAL (mg/kg) | 01-E2-ON-006-2 | 6020 | 14.8 | | t | 90.0 | RF-ON-2H 0-2" | 6010 | | | 5 | 13.84% | |
| SB TOTAL (mg/kg) | 01-E2-ON-008-2 | 6020 | 0.37 | z | 3 | 90.0 | | | | ŀ | | NC SC | |
| SE TOTAL (mg/kg) | 01-E2-ON-006-2 | 6020 | 1.2 | 3 | \vdash | 12 | RF-ON-2H 0-2" | 6010 | | > | 5 | 2€ | |
| TOTAL SOLIDS (PERCENT) | 01-E2-ON-006-2 | 160.3M | 85.2 | | T | | | | | | | | |
| ZN TOTAL (mg/Kg) | 01-E2-ON-006-2 | 6020 | 38.5 | | - | 9.0 | RF-ON-2H 0-2" | 6010 | | | 5 | 49.76% | |
| | | | | | | | | | | | | | |

NC - Not Calculated because one or both concentrations are non detects, moVig. Milligrams per kilogram.
moVI. Milligrams per liter.
S - Soil.
W - Water.
HPD - Relative Percent Difference.

All samples with Usability column left blank have been determined acceptable.
Samples with RPDs above 50% and acceptable were determined acceptable based on the 5x rule.
Shaded results are the higher of the two results.
Phy has been represented as the hydrogen lon (in mol/L) to compare concentration RPDs. The calculation used to determine phi is: phi = -log([h+j]).
RL - Reposing Limit.
Val Qual - Validator qualifier(s).
Lab Rem - Lab qualifier(s).

CDM Federal Programs Corporation

WtV2280-RAC8\088-RichardsonFlats\Database\Current\May2001\mport.mdb rpiSplitComparisonMay2001_01 07-18-01

| ilyte ID 0-2" <u>0509200</u> | Method 6020 | Result Rem Qual | | | | | | | | | | |
|--|----------------|-----------------|--------------------|-----------|---------|---------------|--------|-------------------|-----|----|---------|----------------------------|
| -ON-3D 0-2" Q509200 (mg/kg) (mg/kg) (mg/kg) | 0209 | 大学 あるない | Lab Val Rem Qua | Val | 교 | Sample ID | Method | Lab Result Rem | Rem | R. | RPD | Usability |
| | 0209 | | | S. | 1 | | | · France | | | | |
| | 0209 | 0.21 | 卜 | - | 20.0 | RF-ON-3D 0-2" | 6010 | | 5 | s | Ş | |
| | | 3.1 | \vdash | \dagger | 9.6 | RF-ON-3D 0-2" | 6010 | | | 5 | 174.75% | 174.75% Unacceptable - RPD |
| | 8020 | 0.39 | \vdash | \vdash | 90.0 | RF-ON-30 0-2" | 6010 | | | ક્ | 153.98% | 153.98% Unacceptable - RPD |
| | 0209 | 16.2 | \vdash | \vdash | 20 | RF-ON-30 0-2" | 6010 | | | 5 | 38.81% | |
| | 6020 | 21.3 | ┢ | \vdash | 0.1 | RF-ON-30 0-2" | 6010 | | | 5 | 116.72% | Unacceptable - RPD |
| H+ (mol/L) 01-E2-ON-025-2 | 9045C | 4.96-08 | ┢ | \vdash | 1.0E-14 | | | | Ŀ | | | |
| PB TOTAL (mg/Kg) 01-E2-ON-025-2 | 9050 | 16.4 | H | \vdash | 90:0 | RF-ON-3D 0-2" | 6010 | ÷ | | 5 | 187.66% | Unacceptable - RPD |
| SB TOTAL (mg/Kg) 01-E2-ON-025-2 | 6020 | 0.24 | Z | 3 | 90.0 | | | | ŀ | | SKC. | |
| SE TOTAL (mg/Kg) 01-E2-ON-025-2 | 6020 | 1.2 | 5 | - | 12 | RF-ON-30 0-2" | 6010 | | 3 | 2 | 2 | |
| TOTAL SOLIDS (PERCENT) 01-E2-ON-025-2 | 160.3M | 82.9 | \vdash | 十 | | | | | Ŀ | | | |
| ZN TOTAL (mg/Kg) 01-E2-ON-025-2 | 6020 | 62.4 | ┢ | - | 9.6 | RF-ON-3D 0-2" | 6010 | , | | 2 | 165.01% | 165.01% Unacceptable - RPD |

NC - Not Calculated because one or both concentrations are non detects. mg/Kg - Milligrams per kilogram. mg/L - Milligrams per liter. S - Soll. W - Water. RPD - Relative Percent Difference.

All samples with Nability column tell blank have been determined acceptable.
Samples with RPDs above 50% and acceptable were determined acceptable based on the 5x rule.
Samples with RPDs above 50% and acceptable were determined acceptable based on the 5x rule.
Samples with RPDs above 50% and acceptable were determined acceptable besone the higher of the two results.

PH has been represented as the hydrogen fon (in moVL) to compare concentration RPDs. The calculation used to determine pH is: pH = -log([H+]).

RL - Reporting Limit.

Vel Qual - Validator qualifier(s).

Lab Rem - Lab qualifier(s).

CDM Federal Programs Corporation

. Mt.12280-RAC81088-RichardsonFlats/Database/Current/May2001/Import.mdb.pdtSplitComparisonMay2001_01 07-18-01

| | | CD | 5 | | | | | CPCM | | | | | |
|-------------------------------------|-----------------|--------|----------------------------|------------|----------|-------------|--|---------|-------------------|---------|---------|--------|-----------|
| Analyte | Sample ID | Method | Lab Val Result Rem Qual | Lab Rem | | 굺 | Sample ID | Method | Lab Result Rem | Rem Des | 吊 | RPD | Usability |
| 3E: RF-ON-3E 15-17" 0518200 70 1513 | | 运动 | | 持人 | | | を できる はいこう こうしん かんしん こうしん かんしん こうしん かんしん かんしん かんしん かんしん かんしん かんしん かんしん か | | | 4 | 1000000 | | |
| AG TOTAL (mg/Kg) | 01-E2-ON-019-18 | 0209 | 0.31 | - | - | 20.0 0.0 | RF-ON-3E 15-17 | 9010 | | 2 | 2 | Ş | |
| AL TOTAL (mg/kg) | 01-E2-ON-019-18 | 60106 | 15100 | - | - | 12.2 | RF-ON-3E 15-17" | 6010 | | | 2 | 36.31% | |
| AS TOTAL (mg/Kg) | 01-E2-ON-019-18 | 9020 | + | | - | 9.6 | RF-ON-3E 15-17" | 6010 | | | 2 | 54.55% | |
| CD TOTAL (mg/Kg) | 01-E2-ON-019-18 | 9020 | 0.45 | | - | 90.0 | RF-ON-3E 15-17" | 6010 | | > | 9S: | ş | |
| CR TOTAL (mg/Kg) | 01-E2-ON-019-18 | 9620 | 13.3 | | - | 0.2 | RF-ON-3E 15-17 | 6010 | | | 5 | 57.37% | |
| CU TOTAL (mg/Kg) | 01-E2-ON-019-18 | 6020 | 15.8 | | \vdash | 5 | RF-ON-3E 15-17" | 6010 | | | 5 | 45.10% | |
| FE TOTAL (mg/Kg) | 01-E2-ON-019-18 | 80108 | 17100 | | \vdash | 6.4 | RF-ON-3E 15-17" | 6010 | | | 5 | 37.91% | |
| H+(mol/L) | 01-E2-ON-019-18 | 90450 | 3.89E-08 | - | F | 1.0E-14 | | 1. | | Ŀ | | | |
| PB TOTAL (mg/kg) | 01-E2-ON-019-18 | 6020 | | | \vdash | 90.0 | RF-ON-3E 15-17" | 6010 | æ | | 5 | 8.17% | |
| SB TOTAL (mg/Kg) | 01-E2-ON-019-18 | 6020 | 0.46 | z | 3 | 90.0 | RF-ON-3E 15-17 | 6010 | | 9 | 5 | Ş | |
| SE TOTAL (mg/Kg) | 01-E2-ON-019-18 | 9020 | 1.2 |] | - | 1.2 | RF-ON-3E 15-17" | 6010 | | 3 | 5 | £ | |
| TOTAL SOLIDS (PERCENT) | 01-E2-ON-019-18 | 160.3M | 81.7 | | - | | | <u></u> | | ŀ | ļ, | - | |
| ZN TOTAL (mg/Kg) | 01-E2-ON-019-18 | 6020 | 72.1 | | - | 9.0 | RF-ON-3E 15-17 | 6010 | 1.1. | | 5 | 18.73% | |

NC - Not Calculated because one or both concentrations are non detects.
mg/kg - Milligrams per kilogram.
mg/L - Milligrams per liter.
S - Soil.
W - Water.
RPD - Relative Percent Difference. All samples with Usability column left blank have been determined acceptable.

Samples with APDs above 50% and acceptable were determined acceptable based on the 5x rule.

Shaded results are the higher of the two results.

ph has been represented as the hydrogen ion (in molf.) to compare concentration RPDs. The calcutation used to determine ph is: ph = -log([h+]). RI. * Reporting Limit.

Val Qual * Velidation qualitient(s).

Lab Rem * Lab qualitient(s).

CDM Federal Programs Corporation

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| _ | | CD | Z | | | | | UPCM | | | | | |
|----------------------------|----------------|--|----------------------------|---------------------|----------|---------|---------------------------------------|-------------------|--|-----|--------|-----------------------|-----------|
| Analyte | Sample ID | Method | Lab Val Result Rem Qual | Lab Val Rem Qual | 1 | ¥. | Sample (D | Method Result Rem | Result | g E | 126 | RPD | Usability |
| 3G: RF-ON-3G 0-2" 0508200H | | 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1 | | | 100 | 1 | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | | は、は、は、は、は、は、は、は、は、は、は、は、は、は、は、は、は、は、は、 | | 127.18 | | |
| AS TOTAL (mg/Kg) | 01-E2-CN-009-2 | 9050 | 10.8 | | - | 0.5 | RF-ON-3G 0-2" | 6010 | | | 5 | 10.53% | |
| H+ (mol/L) | 01-E2-ON-009-2 | 9045C | 1.58E-07 | - | - | 1.0E-14 | | | | | 1. | . . | |
| PB TOTAL (mg/Kg) | 01-E2-ON-009-2 | 9020 | | T | \vdash | 9.05 | 0.05 RF-ON-3G 0-2" | 6010 | R | | 2 | 4.26% | |
| TOTAL SOLIDS (PERCENT) | 01-E2-ON-009-2 | 160.314 | 83.9 | T | \vdash | | | | . | Ŀ | 1 | | |

NC - Not Calculated because one or both concentrations are non detects. mg/Kg - Milligrams per kilogram. mg/L - Milligrams per kilogram.

S - Soil. W - Water. RPD - Relative Percent Difference.

All samples with Usability column left blank have been determined acceptable.

Samples with RPDs above 50% and acceptable were determined acceptable based on the 5x rule.

Shaded results are the higher of the two results.

Phy has been represented as the hydrogen ion (in mol/L) to compare concentration RPDs. The calculation used to determine pH is: pH = -log([H+]). RI. - Reporting Linit.

Val Qual - Validator qualifler(s).

Lab Rem - Lab qualifier(s).

CDM Federal Programs Corporation

| | | 2 | 3 | | | | | UPCM | | | | | |
|--------------------------|----------------|--------|----------------------------|---------------------|-----|---------|--------------------|-------------------|--------|---|---|--------|-----------|
| Analyte | Sample ID | Method | Lab Val Result Rem Qual | Lab Val Rem Qual | Val | ح | Sample ID | Method Result Rem | Result | 를 | 7 | RPO | Usability |
| 3H: RF-ON-3H 0-2" 050720 | 10 | | | | | | 子 とうないというない | | | 1 | | | |
| AS TOTAL (mg/kg) | 01-E2-ON-005-2 | 90% | S | | | 9.0 | RF-ON-3H 0-2" | 6010 | | | 9 | 40.00% | |
| H+ (mol/L) | 01-E2-ON-005-2 | 9045C | 2.51E-08 | | - | 1.0E-14 | | | | ŀ | | | |
| PB TOTAL (mg/Kg) | 01-E2-ON-005-2 | 9020 | | | 1 | 90.0 | 0.06 RF-ON-3H 0-2" | 6010 | 25 | | 2 | 10.96% | |
| TOTAL SOLIDS (PERCENT) | 01-E2-ON-005-2 | 160.3M | 81.3 | | | | | | | ŀ | ŀ | | |
| | | | | | 1 | | | | | | | | |

NC - Not Calculated because one or both concentrations are non detects.
mg/Kg - Milligrams per kilogram.
mg/L - Milligrams per liter;
S - Soil.
W - Water.
RPD - Relative Percent Difference. All samples with Usability colurm left blank have been determined acceptable.
Samples with RPDs above 50% and acceptable were determined acceptable based on the 5x rule.
Shaded results are the higher of the two results.
Shaded results are the higher of the two results.
pth has been represented as the hydrogen ion (in mold.) to compare concentration RPDs. The calculation used to determine pH is: pH = -log([H+]).
RIL - Reporting Limit.
Val Qual - Validator qualifier(s).
Lab Rem - Lab qualifier(s).

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| | | CD | 3 | | | | UPCM | | } | | | : |
|--------------------------|----------------|----------------|--------|-----------------|---------|---------------|-------------------|--------|------------|---|--------|-----------|
| Analyte | Sample ID | Method | Result | Result Rem Qual | 글 | Sample ID | Method Result Rem | Result | Lab Rem | 료 | RPD | Usability |
| 4G: RF-ON-4G 0-2" 050820 | 100 | Y The state of | - T. | 年の意 | | | | | | | | |
| AS TOTAL (mg/kg) | 01-E2-ON-006-2 | 0,209 | 2.8 | _ | 0.5 | RF-ON-4G 0-2" | 6010 | | | s | 79.57% | |
| H+ (moi/L) | 01-E2-ON-008-2 | 9045C | 2E-08 | - | 1.0E-14 | | , | | ŀ | , | - | |
| PB TOTAL (mg/Kg) | 01-E2-ON-006-2 | 0209 | 19 | - | 90.0 | RF-ON-4G 0-2" | 6010 | | | 2 | 5.13% | |
| TOTAL SOLIDS (PERCENT) | 01-E2-ON-008-2 | 160.3M | 76.8 | - | | | | ٠ | ŀ | | - | |

NC - Not Calculated because one or both concentrations are non detects.
mg/K_Q - Milligrams per kilogram.
mg/L - Milligrams per liter.
S - Soll.
W - Water.
RPO - Relative Percent Difference.

All samples with Usability column left blank have been detarmined acceptable.

Samples with RPDs above 50% and acceptable were detarmined acceptable based on the 5x rule.

Shaded results are the higher of the two results.

Shaded results are the higher of the two results.

Ph has been represented as the hydrogen ion (in mol/L) to compare concentration RPDs. The calculation used to determine pH is: pH = -log([H+t]). He reporting Limit.

Val Qual - Validator qualifier(s).

Lab Rem - Lab qualifier(s).

CDM Federal Programs Corporation

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| | | CDM | - | | | | | UPCM | | | | | |
|----------------------------|--|--------|----------|---------------------|------|---------|---------------|--------|-------------------|-----|----|----------|-----------|
| Analyte | Sample ID | Method | Result | Lab Val Rem Qual | Qual | 岩 | Sample ID | Method | Lab Result Rem | P E | H. | RPD | Usability |
| 4G: RF-ON-4G 5-7" 05082061 | 910 - A STATE OF THE STATE OF T | | 经基金基金 | 1.2 | | | | | | 1 | | | |
| AG TOTAL (mg/Kg) | 01-E2-ON-008-7 | 6020 | 0.3 | | - | 0.02 | RF-ON-46 5-7" | 6010 | | 3 | 5 | NC NC | |
| AL TOTAL (morks) | 01-E2-ON-008-7 | 60108 | 21600 | | r | = | RF-ON-4G 5-7 | 6010 | | 1 | 3 | 18.87% | |
| AS TOTAL (mg/kg) | 01-E2-ON-008-7 | 9050 | 26 | Γ | | 9.5 | RF-ON-4G 5-7 | 6010 | | | 9 | 101.89% | |
| CD TOTAL (mg/Kg) | 01-E2-ON-008-7 | 9050 | | T | | 90.0 | RF-ON-4G 5-7 | 6010 | 0.5 | - | જ | ¥ | |
| CR TOTAL (mg/Kg) | 01-E2-ON-008-7 | 6020 | 15.1 | | | 0.2 | RF-ON-4G 5-7 | 6010 | | | 2 | 27.92% | |
| CU TOTAL (mg/Kg) | 01-E2-ON-008-7 | 8020 | 24.4 | Γ | | 2.0 | RF-ON-4G 5-7" | 6010 | | T | 9 | 43.59% | |
| FE TOTAL (mg/Kg) | 01-E2-ON-006-7 | 60108 | 20300 | | T | 2.7 | RF-ON-4G 5-7" | 6010 | | T | 2 | 25.75% | |
| H+ (mol/L.) | 01-E2-ON-008-7 | 904SC | 3.72E-08 | | | 1.0E-14 | | | | T. | | - | |
| PB TOTAL (mg/kg) | 01-E2-ON-008-7 | 6020 | 17.6 | ┞ | | 0.05 | RF-ON-46 5-7 | 6010 | | T | 2 | 48.93% | |
| SB TOTAL (mg/Kg) | 01-E2-ON-008-7 | 6020 | 0.31 | z | 3 | 0.05 | RF-ON-4G 5-7 | 6010 | | - | 2 | ş | |
| SE TOTAL (mg/Kg) | 01-E2-ON-008-7 | 6020 | = | 3 | | 1.7 | RF-ON-4G 5-7 | 6010 | | 5 | 25 | Ş | |
| TOTAL SOLIDS (PERCENT) | 01-E2-ON-008-7 | 160.3M | 76 | | | | | | | ŀ | | | |
| ZN TOTAL (mg/Kg) | 01-E2-ON-008-7 | 6020 | 3 | | - | 0.5 | RF-ON-4G 5-7" | 6010 | 1.15 | T | 2 | 43.90% | |

NC - Not Calculated because one or both concentrations are non detects, moVG - Milligrams per kilogram. moV- Milligrams per kilogram. moV- Milligrams per liter. S - Soil. W - Weter. W - Weter. All samples with Usability column left blank have been determined acceptable.
Samples with RPDs above 50% and acceptable were determined acceptable based on the 5x rule.
Shaded results are the higher of the two results.
Phase bean represented as the hydrogen ion (in mol/L) to compare concentration RPDs. The calculation used to determine pH is: pH = -log([I++]).
Nat Cual - Validator qualitier(s).
Lab Rem - Lab qualitier(s).

CDM Federal Programs Corporation

M10280-RAC81088-RichardsonFlats\Databasa\Current\May2001tmport.mdb rptSplitComparison\May2001_01 07-18-01

| Analyte | | 5 | 5 | | | | | UPCM | | | | | |
|---|----------------|---------------|----------------------------|---------------------|----------|------------|---------------|-------------------|---------|--------|---|-------|-----------|
| | Sample ID | Method | Lab Val Result Rem Qual | Lab Val Rem Qual | Val | 1 | Sample ID | Method Result Rem | Result | Re Tab | 7 | APD | Usability |
| 4i: RF-ON-4i 0-2" 05082061 | The Control of | | | | | 1. Sec. 1. | が は は ない | | 1. S. F |] | | | |
| AS TOTAL (mg/Kg) 01-E2-ON-001-2 | 2-10 | 0209 | 15.5 | - | - | 9.6 | RF-ON-41 0-2" | 6010 | | | 5 | 9.23% | |
| H+ (moUL) 01-E2-ON-001-2 | 2-10 | 2045 C | 1.48E-08 | \vdash | \vdash | 1.0E-14 | | | | ŀ | 1 | | |
| PB TOTAL (mg/kg) 01-E2-ON-001-2 | 2-10 | 0208 | 319 | H | \vdash | 9.0 | RF-ON-41 0-2" | 6010 | | | 2 | 7.54% | |
| TOTAL SOLIDS (PERCENT) , 01-E2-ON-001-2 | 2-10 | 160.3M | 1.19 | \vdash | - | | | | | Ŀ | | | |

NC - Not Calculated because one or both concentrations are non detects.
rrg/Kg - Milligrams per kilogram.
rrg/L - Milligrams per liter.
S - Sol.
W - Water.
RPD - Relative Percent Difference. All samples with Nsabillity column test blank have been determined acceptable.
Samples with RPDs above 50% and acceptable were determined acceptable based on the 5x rule.
Shaded results are the higher of the two results.
He has been represented as the hydrogen Ion (in mo/L) to compare concentration RPDs. The calcutation used to determine pH is; pH = -log([H+]).
He. Paporting Limit.
Val Crust - Validator qualifier(s).
Lab Rem - Lab qualifier(s).

CDM Federal Programs Corporation

M:V2280-RAC8/088-RichardsonPlais/Database/Qurent/May2001Import.mdb pt/Split/ComparisonMay2001_01 07-18-01

| | Result | | | | | 5 | | | | | |
|--|-------------------|---------------------|----------|---------|----------------|-------------------|---------------------------------------|-------|---|--------|-----------|
| 5082904 | The second second | Lab Val Rem Qual | Vai | 吊 | Sample ID | Method Result Rem | Result | Red E | 뒽 | RPD | Usability |
| 01-E2-ON-007-2 | The second second | | | 李子 | 一日 学の一年 大学のである | and the state of | · · · · · · · · · · · · · · · · · · · | | | | |
| 01-52-044-007.2 | 14.3 | - | | 0.5 | RF-ON-5G 0-2" | 6010 | | | 5 | 33.24% | |
| | 1.86E-08 | 1 | \vdash | 1.0E-14 | | | | ŀ | 1 | | |
| PB TOTAL (mg/Kg) 01-E2-ON-007-2 6020 | 202 | T | H | 90.0 | RF-ON-5G 0-2" | 6010 | | | 2 | 48.97% | |
| TOTAL SOLIDS (PERCENT) 01-E2-ON-007-2 160.3M | 782 | T | \vdash | | | | | Ŀ | | - | |

NC - Not Calculated because one or both concentrations are non detects.
mg/Kg - Milligrams per kitogram.
mg/L - Milligrams per liter.
S - Soil.
W - Water.
RPD - Retative Percent Difference.

All samples with Usability column left blank have been determined acceptable.

Sarroles with RPDs above 50% and acceptable were determined acceptable based on the 5x rute.

Shaded results are the higher of the two results.

Phy Haz been represented as the hydrogen ion (in mol/L) to compare concentration RPDs. The calculation used to determine pH is: pH = -log([H+]).

RL - Reporting Limit.

Val Qual - Validator qualifier(s).

CDM Federal Programs Corporation

M:U280-RAC60088-RichardsonFlats\Database\Current\May2001Import.mdb\mtSplitComparisonMay2001_01 07-18-01

| | | CD | 2 | | | | | UPCM | | | | | |
|-------------------------------|----------------|--------|----------------------------|-------|----------|---------|----------------|--------|------------|-----|-----|--------|--------------------|
| Analyte | Sample ID | Method | Lab Val Result Rem Qual | Reg P | Val | 岩 | Sample ID | Method | Result Rem | Lab | ä | RPD | Usability |
| SD-1: RF-SD-SD1 0-6"_05112001 | 12001 | | | | | | | | -1 | | | | ļ |
| AG TOTAL (mg/Kg) | 01-E2-SD-001-6 | 9020 | 12.1 | | - | 9.00 | RF-SD-SD1 0-6" | 6010 | | | 3 | 69.54% | |
| AL TOTAL (mg/Kg) | 01-E2-SD-001-6 | 60108 | 4230 | | \vdash | 9.6 | RF-SD-SD1 0-6" | 6010 | | | 5 | 13.66% | |
| AS TOTAL (mg/kg) | 01-E2-SD-001-6 | 8020 | 97.1 | | - | 0.5 | RF-SD-SD1 0-6" | 6010 | | | 2 | 46.54% | |
| CD TOTAL (mg/Kg) | 01-E2-SD-001-6 | 9020 | 45.7 | | + | 90.0 | RF-SD-SD1 0-6" | 6010 | | | 05. | 46.00% | |
| CR TOTAL (mg/Kg) | 01-E2-SD-001-6 | 90209 | 8 | | - | 0.2 | RF-SD-SD1 0-6" | 6010 | | | 2 | 76.92% | |
| CU TOTAL (mg/Kg) | 01-E2-SD-001-6 | 9050 | 117 | | - | 0.1 | RF-SD-SD1 0-6* | 6010 | | | 2 | 82.12% | Unacceptable - RPD |
| FE TOTAL (mg/Kg) | 01-E2-SD-001-6 | 60108 | 22600 | | \vdash | 3.8 | RF-SO-SD1 0-6" | 6010 | | | 2 | 55.36% | Unacceptable - RPD |
| H+ (mol/L) | 01-E2-SD-001-6 | 9045C | 2.95E-08 | | - | 1.0E-14 | | | Ŀ | ŀ | | | |
| PB TOTAL (mg/Kg) | 01-E2-SD-001-6 | 60108 | 2470 | | - | 19.1 | RF-SD-SD1 0-6" | 6010 | | | 2 | 34.23% | |
| SB TOTAL (mg/Kg) | 01-E2-SD-001-6 | 0209 | | z | - | 0.05 | RF-SD-SD1 0-6" | 6010 | 22 | | S | 6.71% | |
| SE TOTAL (mg/Kg) | 01-E2-SD-001-6 | 9050 | 5.9 | | + | - | RF-SD-SD1 0-6" | 6010 | | | 2 | 30.22% | |
| TOTAL SOLIDS (PERCENT) | 01-E2-SD-001-6 | 160.3M | 58.1 | | - | | | | ŀ | ŀ | 1 |] | |
| ZN TOTAL (mg/Kg) | 01-E2-SD-001-6 | 6010B | 9550 | | \vdash | 1.9 | RF-SD-SD1 0-6" | 6010 | 1.00 | | 2 | 22.74% | |
| | | | | | | | | | | | | | |

NC - Not Catodated because one or both concentrations are non detects.
mg/Kg - Milligrams per kitogram.
mg/L - Milligrams per liter.
S - Soil.
W - Water.
HPD - Relative Percent Difference.

All samples with Usability column left blank have been determined acceptable.

Samples with RPDs above 50% and acceptable were determined acceptable based on the 5x rule.

Shaded results are the higher of the two results.

pH has been represented as the hydrogen ion (in mol/L) to compare concentration RPDs. The calcutation used to determine pH is: pH = -log([H+]). All Last Order patilities (s).

Last Alegoration qualities (s).

Lab Rem - Lab qualities (s).

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At V286-BAC6088-Richardson Flats Database VCument Way 2001 Import.mdb rpt Split Comparison May 2001_01 07-18-01

| | | CDM | . | | | | | UPCM | | | | | |
|------------------------------|----------------|-----------|----------|------------|------------|---------|-------------|---------|----------|------------|---------|---------|----------------------|
| Analyte | Sample ID | Method | Result | Ren Rem | Val | 긡 | Sample ID | Method | Result | Lab Reg | ä | RPD | Usability |
| RF-6-2: RF-SW-RF6-2 05072001 | 72001 | | | | | | | | | | | | |
| AG DISSOLVED (mg/L) | 01-E2-SW-003-0 | 9050 | 0.00002 | 3 | _ | 0.00002 | RF-SW-RF6-2 | 6010 | | 2 | 206 | S.C | |
| AG TOTAL (mgA.) | 01-E2-SW-003-0 | 9050 | 0.00002 | 3 | ° | 0.00002 | RF-SW-RF6-2 | 6010 | | 2 | 500. | SC. | |
| AL DISSOLVED (mg/L) | 01-E2-SW-003-0 | 60108 | 0.05 | 5 | | 0.05 | RF-SW-RF6-2 | 6020 | 0.05 | - | 8 | Ş | |
| AL TOTAL (mg/L) | 01-E2-SW-003-0 | 8010B | 0.05 | 3 | - | 900 | RF-SW-RF6-2 | 6010 | 90.0 | - | 8 | ž | |
| ALKALINITY (mg/L 245 CACO3) | 01-E2-SW-003-0 | 310.1 | 218 | | <u> </u> _ | 2 | RF-SW-RF6-2 | 310.1 | 2 | L | - | 0.91% | |
| AMMONIA (mg/L as N) | 01-E2-SW-003-0 | 350.1 | 0.05 | 3 | | 0.05 | • | - | | Ŀ | | ž | |
| ANION SUM (meq/L) | 01-E2-SW-003-0 | SM 1030F1 | 1.73 | | - | | | | | Ŀ | | | |
| AS DISSOLVED (mg/L) | 01-E2-SW-003-0 | 0209 | 0.0042 | | | 0.0005 | RF-SW-RF6-2 | 9020 | | 2 | 200. | Ş | |
| AS TOTAL (mg/L) | 01-E2-SW-003-0 | 8299 9 | 0.0043 | | | 0.0005 | RF-SW-RF6-2 | 9050 | | | 200. | 70.68% | |
| CA DISSOLVED (mg/L.) | 01-E2-SW-003-0 | 60108 | 230 | | - | 28. | | ļ. L | ŀ | ŀ | ļ. | | |
| CATION SUM (meq/L) | 01-E2-SW-003-0 | SM 1030F1 | e | | - | | | | <u> </u> | Ŀ | ŀ | 1 | |
| CD DISSOLVED (mg/L) | 01-E2-SW-003-0 | 6020 | 0.00005 | 3 | | 0.00005 | RF-SW-RF6-2 | 9050 | | 3 | 100 | Ş | |
| CD TOTAL (mg/L) | 01-E2-SW-003-0 | 6020 | 0.0000 | | ° | 0.00005 | RF-SW-RF6-2 | 9050 | | - | 100: | SC | |
| CHLORIDE (mg/L) | 01-E2-SW-003-0 | 300.0 | 78.1 | | _ | 0.4 | RF-SW-RF6-2 | 325.2 | ξ, | | - | 14.16% | |
| CO3 (mg/L as CACO3) | 01-E2-SW-003-0 | SM 2320B | | 3 | _ | 2 | RF-SW-RF6-2 | 310.1 | - | ٦ | - | S | |
| CONDUCTIVITY (uMHOS/cm) | 01-E2-SW-003-0 | 120.1 | | | - | 2 | RF-SW-RF6-2 | 120.1 | 1508 | | 10 | 2.75% | |
| CR DISSOLVED (mg/L) | 01-E2-SW-003-0 | 60109 | 9000 | 2 | | 500.0 | RF-SW-RF6-2 | 6010 | 19070 | ٦ | 10. | Ş | |
| CR TOTAL (mg/L) | 01-E2-SW-003-0 | 60108 | 0.005 | 3 | | 0.005 | RF-SW-RF6-2 | 6010 | 7110 | 5 | 10. | SC | |
| CU DISSOLVED (mg/L) | 01-E2-SW-003-0 | 9050 | 0.0014 | | | 0.0001 | RF-SW-RF6-2 | 9050 | | | 300. | 167.82% | Unacceptable - 5x RL |
| CU TOTAL (mg/L) | 01-E2-SW-003-0 | 6020 | 0.0013 | | | 0.0001 | RF-SW-RF6-2 | 0209 | 100 | | 500. | 171.58% | Unacceptable - 5x RL |
| FE DISSOLVED (mg/L) | 01-E2-SW-003-0 | 6010B | 0.02 | 9 | _ | 0.02 | RF-SW-RF6-2 | 6010 | | 2 | | Š | |
| FE TOTAL (mg/L) | 01-E2-SW-003-0 | 6010B | 0.0315 | | | 0.02 | RF-SW-RF6-2 | 6010 | | 2 | | NC | |
| H+ (mol/L) | 01-E2-SW-003-0 | 150.1 | in Said | | _ | 1.0E-14 | RF-SW-RF6-2 | 150.1 | 6.31E-09 | | 1.0E-14 | %10.76 | Unacceptable - RPD |
| HARDNESS (mg/L as CACO3) | 01-E2-SW-003-0 | 6010B/SM | 160. | | | 0.2 | RF-SW-RF6-2 | 23408 | 729 | L | 0.2 | 7.91% | |
| HCO3 (mg/L as CACO3) | 01-E2-SW-003-0 | SM 2320B | 218 | | - | 2 | RF-SW-RF6-2 | 310.1 | 2204 | | - | 0.91% | |

NC - Not Calculated because one or both concentrations are non detects.
mg/kg - Milligrams per kitogram.
mg/k. - Milligrams per liter.
S - Soil.
W - Water.
RPD - Relative Percent Difference.

All samples with Usability column left blank have been determined acceptable.
Samples with RPDs above 50% and acceptable were determined acceptable based on the 5x rule.
Shaded results are the higher of the two results.
Phacear represented as the hydrogen fon (in mol/L) to compare concentration RPDs. The calculation used to determine pH is: pH = -log([H+]).
RI. - Reporting Limit.
Val Qual - Validator qualifier(s).
Lab Rem - Lab qualifier(s).

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M:V280-RAC8/088-RichardsonFlats/Database/CurrentWay2001Import.mdb rptSptit/ComparisonMay2001_01 07-18-01

| | | CDI | 3 | | | | | UPCM | | | | | |
|-------------------------------|----------------|--------|---------|---------------------|-------------|---------|-------------|--------|----------|-----|------|----------|-----------|
| Analyte | Sample ID | Method | Result | Lab Val Rem Qual | Val Qual | 귵 | Sample ID | Method | Result | Rem | F | APD | Usability |
| RF-6-2: RF-SW-RF6-2_05072001 | 2001 | 7.00 A | | 1001 | i, | * 3 | | | | | | | |
| K DISSOLVED (mg/L) | 01-E2-SW-003-0 | 60108 | 2 | 5 | _ | 2 | | - | <u> </u> | Ŀ | | 2 | |
| MG DISSOLVED (mg/L) | 01-E2-SW-005-0 | 80108 | 49.9 | | - | 90.0 | | | | ŀ | | | |
| MN DISSOLVED (mg/L) | 01-E2-SW-003-0 | 6020 | 0.381 | | | 0.00005 | RF-SW-RF6-2 | 9010 | | | 500. | 4.87% | |
| MN TOTAL (mg/L) | 01-E2-SW-003-0 | 9020 | 0.378 | | F | 0.00005 | RF-SW-RF6-2 | 9010 | | | 900. | 12.87% | |
| NA DISSOLVED (mg/L) | 01-E2-SW-003-0 | 60108 | 47.9 | | - | 0.1 | | - | ŀ | ŀ | | | |
| NITRATE + NITRITE (mg/L BS N) | 01-E2-SW-003-0 | 353.2 | 0.2 | 3 | ┢ | 0.2 | | - | | · | | S | |
| P TOTAL (mg/L) | 01-E2-SW-003-0 | 365.3 | 0.03 | | H | 0.01 | RF-SW-RF6-2 | 365.1 | | 2 | ٠. | Ş | |
| PB DISSOLVED (mg/L) | 01-E2-SW-003-0 | 6020 | 0.0005 | | | 0.00002 | RF-SW-RF6-2 | 6020 | | | 500: | 173.33% | |
| PB TOTAL (mg/L) | 01-E2-SW-003-0 | 6020 | 0.00068 | | \vdash | 0.00002 | RF-SW-RF6-2 | 8020 | | 3 | .005 | NC NC | |
| SB DISSOLVED (mg/L) | 01-E2-SW-003-0 | 6020 | 0.00216 | | \vdash | 0.00005 | RF-SW-RF6-2 | 9050 | 1 | ס | 500. | SC | |
| SB TOTAL (mg/L) | 01-E2-SW-003-0 | 6020 | 0.00212 | | | 0.00005 | RF-SW-RF6-2 | 6020 | | | .005 | 130.03% | |
| SE DISSOLVED (mg/L) | 01-E2-SW-003-0 | 6020 | 0.003 | J. | \vdash | 0.003 | RF-SW-RF6-2 | 9050 | | 9 | 90. | SC. | |
| SE TOTAL (mg/L) | 01-E2-SW-003-0 | 6020 | 0.003 | N, | | 0.003 | RF-SW-RF6-2 | 6020 | | 5 | 900 | S | |
| SO4 (mg/L) | 01-E2-SW-003-0 | 300.0 | 539 | _ | - | 20 | RF-SW-RF6-2 | 9036 | | | 8 | 10.38% | |
| TOTAL SOLIDS DISSOLVED (mg/L) | 01-E2-SW-003-0 | 160.1 | 1150 | | | 2 | RF-SW-RF6-2 | 160.1 | 7. | | 10 | 3.59% | |
| TOTAL SOLIDS SUSPENDED (mg/L) | 01-E2-SW-003-0 | 160.2 | 4 | n | | 2 | RF-SW-RF6-2 | 160.2 | - | 3 | - | Š | |
| ZN DISSOLVED (mg/L) | 01-E2-SW-003-0 | 60108 | | | | 10.0 | RF-SW-RF6-2 | 6020 | 0.11 | | 10. | 14.35% | |
| ZN TOTAL (mg/L) | 01-E2-SW-003-0 | 60108 | 0.198 | - | | 0.01 | RF-SW-RF6-2 | 6020 | | | 9. | 1.01% | |

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mg/L - Milligrams per liter.
S - Soil.
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The calculation used to determine pH is: pH = -log([H+]).
RL - Reporting Limit.
Vel Oual - Validator qualifier(s).
Lab Rem - Lab qualifier(s).

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M:U280-RAC8\088-RichardsonFlats\Database\Current\May2001import.mdb rptSptitComparisonMay2001_01 07-18-01

| | | NGO | × | | <u> </u> | | | UPCM | | | | | |
|------------------------------|----------------|--------------|---------|------------|-------------|---------|-------------|--------|-------------|-------|----------------|-----------|------------------------------|
| Analyte | Sample ID | Method | Result | Hen Tem | Val Oual | 교 | Sample ID | Method | Result | de Pe | 2 | RPD | Usability |
| RF-7-2: RF-SW-RF7-2 05072001 | | | | 100 | | | | | | | | | |
| AG DISSOLVED (mg/L) | 01-E2-SW-002-0 | 6 020 | 0.00002 | 3 | L | 0.00002 | RF-SW-RF7-2 | 6010 | | 2 | .005 | ¥ | |
| AG TOTAL (mg/L) | 01-E2-SW-002-0 | 9020 | 0.00012 | | - | 0.00002 | RF-SW-RF7-2 | 6010 | | 2 | 909 | ž | |
| AL DISSOLVED (mg/L) | 01-E2-SW-002-0 | 8010B | 0.05 | 3 | - | 0.05 | RF-SW-RF7-2 | 6020 | 0.05 | 9 | 8 | ž | |
| AL TOTAL (mol.) | 01-E2-SW-002-0 | 8010B | 9.05 | 3 | - | 9.05 | RF-SW-RF7-2 | 6010 | | | 89. | ¥ | |
| ALKALINITY (mg/L as CACO3) | 01-E2-SW-002-0 | 310.1 | - 6 | | \vdash | 2 | RF-SW-RF7-2 | 310.1 | | | - | 10.91% | |
| AMMONIA (mg/L as N) | 01-E2-SW-002-0 | 350.1 | 90.0 | 3 | - | 9.03 | | | | ŀ | | ž | |
| ANION SUM (meq/L) | 01-E2-SW-002-0 | SM 1030F1 | 16.2 | | - | | | | | Ŀ | | ŀ | |
| AS DISSOLVED (mg/L) | 01-E2-SW-002-0 | 0209 | 0.0028 | | - | 0.0005 | RF-SW-RF7-2 | 9050 | | 3 | 900 | ž | |
| AS TOTAL (mg/L) | 01-E2-SW-002-0 | 0209 | 0.0045 | | - | 0.0005 | RF-SW-RF7-2 | 9020 | | 7 | .005 | ž | |
| CA DISSOLVED (mg/L) | 01-E2-SW-002-0 | 60108 | 145 | | - | 0.05 | | | | Ŀ | ļ. | ŀ | |
| CATION SUM (maq/L) | 01-E2-SW-002-0 | SM 1030F1 | 15.5 | | | | | | | Ŀ | | ŀ | |
| CD DISSOLVED (mg/L) | 01-E2-SW-002-0 | 6020 | 900:0 | | _ | 0.00005 | RF-SW-RF7-2 | 9020 | 0.008 | | .001 | %00.0 | |
| CD TOTAL (mg/L) | 01-E2-SW-002-0 | 6020 | 0.00702 | | _ | 0.00005 | RF-SW-RF7-2 | 6020 | September 1 | | 100: | 13.05% | |
| CHLORIDE (mg/L) | 01-E2-SW-002-0 | 300.0 | ÷, | | - | 2 | RF-SW-RF7-2 | 325.2 | 569 | | - | 8.20% | |
| CO3 (mg/L as CACO3) | 01-E2-SW-002-0 | SM 2320B | Ž. | 2 | | 2 | RF-SW-RF7-2 | 310.1 | - | ח | - | Ş | |
| CONDUCTIVITY (uMHOS/cm) | 01-E2-SW-002-0 | 120.1 | | | - | 2 | RF-SW-RF7-2 | 120.1 | 1587 | | 2 | 4.50% | |
| CR DISSOLVED (mg/L) | 01-E2-SW-002-0 | 60108 | 0.005 | 2 | _ | 0.005 | RF-SW-RF7-2 | 6010 | 440 | 2 | 10, | Š | |
| CR TOTAL (mg/L) | 01-E2-SW-002-0 | 60108 | 0.005 | 2 | _ | 0.005 | RF-SW-RF7-2 | 6010 | 16.74 | Э | 10. | Š | |
| CU DISSOLVED (mg/L) | 01-E2-SW-002-0 | 6020 | 0.008 | | | 0.0001 | RF-SW-RF7-2 | 9050 | 100 | | 906 | 72.00% | |
| CU TOTAL (mg/L) | 01-E2-SW-002-0 | 6020 | 0.0048 | | | 0.0001 | RF-SW-RF7-2 | 6020 | 4800 B | | .005 | 122.58% (| 122.58% Unacceptable - 5x RL |
| FE DISSOLVED (mg/L) | 01-E2-SW-002-0 | 6010B | 0.038 | | | 0.02 | RF-SW-RF7-2 | 6010 | 107 | 5 | - . | Š | |
| FE TOTAL (mg/L) | 01-E2-SW-002-0 | 60108 | | | | 0.02 | RF-SW-RF7-2 | 6010 | 0.21 | | - | 6.45% | |
| H+ (moML) | 01-E2-SW-002-0 | 150.1 | _ | | - | 1.0E-14 | RF-SW-RF7-2 | 150.1 | 7.94E-09 | | 1.0E-14 | 40.86% | Unacceptable - RPD |
| HARDNESS (mg/L as CACO3) | 01-E2-SW-002-0 | 6010B/SM | | | | 0.2 | RF-SW-RF7-2 | 23408 | 433 | | 0.2 | 8.62% | |
| HCO3 (mg/L as CACO3) | 01-E2-SW-002-0 | SM 2320B | 130 | | | 2 | RF-SW-RF7-2 | 310.1 | 146 | | - | 10.91% | |

All samples with Usability column telt blank have been determined acceptable.
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Shaded results are the higher of the two results.
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RI. - Reporting Limit.
RI. - Reporting Limit.
Val Qual - Validator qualifier(s).
Lab Rem - Lab qualifier(s).

CDM Federal Programs Corporation

NC - Not Catodated because one or both concentrations are non detects.
mg/Kg - Milligrams per kilogram.
mg/L - Milligrams per liter.
S - Soll.
W - Water.
RPD - Relative Percent Difference.

M:\\\280-RAC8\\088-RichardsonFlats\\Database\\Current\\May2001Inport.mdb rpiSpiliComparison\\May2001_01 07-18-01

| | - | 5 | . | | | | UPCM | | | | | • |
|-------------------------------|----------------|-------------|----------|--------------------|----------|-------------|--------|--------|------------|------|----------|-----------|
| Analyte | Sample ID | Method | Result | Lab Val Rem Qua | al PR | Sample ID | Method | Result | Ren Rem | H. | RPO | Usability |
| RF-7-2: RF-SW-RF7-2_05072001 | | 建筑的是 | 100 | | | | | | | | | |
| K DISSOLVED (mg/L) | 01-E2-SW-002-0 | 60108 | 2.17 | _ | 2 | | , | | Ŀ | | | |
| MG DISSOLVED (mg/L) | 01-EZ-SW-002-0 | 60108 | 32.3 | | 0.02 | | - | | Ŀ | | <u> </u> | |
| MN DISSOLVED (mg/L) | 01-E2-SW-002-0 | 9050 | 0.182 | - | 0.00005 | RF-SW-RF7-2 | 6010 | | | 500. | 14.29% | |
| MN TOTAL (mg/L) | 01-E2-SW-002-0 | 9020 | 0.192 | | 0.00005 | RF-SW-RF7-2 | 6010 | | | 500. | 8.96% | |
| NA DISSOLVED (mg/L) | 01-E2-SW-002-0 | 80108 | 148 | | 0.1 | | - | | Ŀ | | <u> </u> | |
| NITRATE + NITRITE (MOL AS N) | 01-E2-SW-002-0 | 363.2 | 0.2 |) | 0.2 | | - | | Ŀ | | 2 | |
| P TOTAL (mg/L) | 01-E2-SW-002-0 | 365.3 | 0.03 | _ | 0.01 | RF-SW-RF7-2 | 365.1 | | 5 | | Š | |
| PB DISSOLVED (mg/L) | 01-E2-SW-002-0 | 6020 | 0.00348 | | 0.00002 | AF-SW-AF7-2 | 9050 | | | 500. | 53.16% | |
| PB TOTAL (mg/L) | 01-E2-SW-002-0 | 6020 | | | 0.00002 | RF-SW-RF7-2 | 6020 | 0.026 | | 500. | 7.06% | |
| SB DISSOLVED (mg/L) | 01-E2-SW-002-0 | 6020 | 0.00845 | | 0.00005 | RF-SW-RF7-2 | 6020 | | | 500. | 26.22% | |
| SB TOTAL (mg/L) | 01-E2-SW-002-0 | 6020 | 0.00911 | | 0.00005 | RF-SW-RF7-2 | 9050 | 5 | | 500: | 9.31% | |
| SE DISSOLVED (mg/L) | 01-E2-SW-002-0 | 0209 | 0.003 | z J | 0.003 | RF-SW-RF7-2 | 9020 | 10.8 | 3 | 80 | Ş | |
| SE TOTAL (mg/L) | 01-E2-SW-002-0 | 6020 | 0.003 | z o | 0.003 | RF-SW-RF7-2 | 9020 | | > | 26. | SC | |
| SO4 (mg/L) | 01-E2-SW-002-0 | 300.0 | 262 | | 2 | RF-SW-RF7-2 | 9036 | | | e, | 6.28% | |
| TOTAL SOLIDS DISSOLVED (mg/L) | 01-E2-SW-002-0 | 160.1 | 836 | | 2 | RF-SW-RF7-2 | 160.1 | | | 9 | 18.56% | |
| TOTAL SOLIDS SUSPENDED (mg/L) | 01-E2-SW-002-0 | 160.2 | 292 | 3 | 2 | RF-SW-RF7-2 | 160.2 | 1.4 | | - | SC | |
| ZN DISSOLVED (mg/L) | 01-E2-SW-002-0 | 60108 | 1.72 | | 0.01 | RF-SW-RF7-2 | 9050 | | | 10. | 15.05% | |
| ZN TOTAL (mg/L) | 01-E2-SW-002-0 | 60108 | 1.74 | - | 0.01 | RF-SW-RF7-2 | 6020 | | | ō | 18.75% | |

NC - Not Catculated because one or both concentrations are non detects.
mg/Kq - Milligrams per kitogram.
mg/L - Milligrams per liter.
S - Soil.
W - Water.
RPD - Relative Percent Difference.

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Shaded results are the higher of the two results.
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He has been represented as the hydrogen fon (in mold.) to compare concentration RPDs. The calculation used to determine prit is: pH = -log([H+]).
RI. + Reporting Limit.
Val Qual - Validator qualifier(s).
Lab Rem - Lab qualifier(s).

CDM Federal Programs Corporation

M:V280-RAC80088-RichardsonFlats/Database\Current\May2001fmport.mdb rptSplitComparisonMay2001_01 07-18-01

| | | δΩ | 3 | | | | | UPCM | | | | | |
|----------------------------|----------------|--------|----------|-----|-------------|------------|--------------|--------|-------------------|-----|----|--------|-----------|
| Analyte | Sample ID | Method | Result | Lab | Val Qual | 吊 | Sample ID | Method | Lab Result Rem | 4 E | 占 | RPD | Usability |
| TP2: RF-TA TP2-4" 95092001 | | | | 经验 | | から なるのではない | 本は、 | | 語の意味が | | | | |
| AG TOTAL (mg/Kg) | 01-E2-TA-002-4 | 9050 | 17.8 | | - | 20.0 | RF-TA TP2-4" | 6010 | | | 2 | 1.12% | |
| AL TOTAL (mg/kg) | 01-E2-TA-002-4 | 60108 | 1220 | | \vdash | 11.1 | RF-TA TP2-4' | 6010 | | | 5 | 18.59% | |
| AS TOTAL (mg/Kg) | 01-E2-TA-002-4 | 0208 | | | T | 9.0 | RF-TA TP2-4' | 6010 | 188 | | 2 | 2.11% | |
| CD TOTAL (mg/Kg) | 01-E2-TA-002-4 | 9050 | | | | 90.0 | RF-TA TP2-4" | 6010 | 82 | | 95 | 20.38% | |
| CR TOTAL (mg/Kg) | 01-E2-TA-002-4 | 9020 | 9.3 | | I | 0.2 | RF-TA TP2-4" | 6010 | | | 2 | 46.91% | |
| CU TOTAL (mg/Kg) | 01-E2-TA-002-4 | 9620 | 168 | | | 1.0 | RF-TA TP2-4" | 6010 | ن | | 5 | 12.29% | |
| FE TOTAL (mg/Kg) | 01-E2-TA-002-4 | 60108 | 30600 | | <u> </u> | 4.4 | RF-TA TP2-4" | 6010 | | | 2 | 28.33% | |
| H+ (moM.) | 01-E2-TA-002-4 | 904SC | 1.58E-08 | | 1 | 1.05-14 | | | | | | | |
| PB TOTAL (mg/Kg) | 01-E2-TA-002-4 | 60108 | | | | 22.2 | RF-TA TP2-4' | 6010 | 2490 | | 5 | 17.58% | |
| SB TOTAL (mg/Kg) | 01-E2-TA-002-4 | 6020 | | z | - | 90:00 | RF-TA TP2-4' | 6010 | જ | | 5 | 21.60% | |
| SE TOTAL (mg/Kg) | 01-E2-TA-002-4 | 6020 | | | | 2 | RF-TA TP2-4" | 6010 | 6 | | 2 | 4.35% | |
| TOTAL SOLIDS (PERCENT) | 01-E2-TA-002-4 | 160.3M | 75.2 | | | | | | | Ŀ | | - | |
| ZN TOTAL (mg/Kg) | 01-E2-TA-002-4 | 6010B | 4480 | | | 2.2 | RF-TA TP2-4" | 6010 | 4 4 5 1 3 | | 5 | 7.52% | |
| | | | | | | | | | | | | | |

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mg/Kg - Milligrams per kilogram.
mg/L - Milligrams per liter.
S - Soil.
W - Water.
RPD - Relative Percent Difference.

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Samples with RPDs above 50% and acceptable were determined acceptable based on the 5x rute.
Shaded results are the higher of the two results.
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Phy has been represented as the hydrogen fon (in molf.) to compare concentration RPDs. The calculation used to determine pH is: pH = -log([H+]].
RI. - Repording Limit.
Val Qual - Validator qualifier(s).
Lab Rem - Lab qualifier(s).

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MY3280-RAC8088-RichardsonFlats\Database\Current\May2001tmport.mdb rptSplitComparisonMay2001_01 07-18-01

| | | CDM | 3 | | | | | UPCM | | | | | |
|----------------------------|----------------|--------|----------|---------------------|-----------|---------|--------------|---------|----------------------|-----|-----|--------|-----------|
| Analyte | Sample ID | Method | Result | Lab Val Rem Qual | Val | 7 | Sample ID | Method | Result Rem | 2 E | I I | RPO | Usability |
| TP1: RF-TA-TP1 3' 05092001 | E | | | | | 1 | | | | | | | |
| AG TOTAL (mg/Kg) | 01-E2-TA-001-3 | 9050 | 7.1 | | 1 | 0.02 | RF-TA-TP1 3' | 6010 | | | 5 | 23.60% | |
| AL TOTAL (mg/Kg) | 01-E2-TA-001-3 | 8010B | 1540 | | T | 11.2 | RF-TA-TP1 3' | 8010 | | | 5 | 0.65% | |
| AS TOTAL (mg/kg) | 01-E2-TA-001-3 | 9050 | 249 | | T | 9.0 | RF-TA-TP13' | 6010 | | | 5 | 18.25% | |
| CD TOTAL (mg/Kg) | 01-E2-TA-001-3 | 9020 | | | \vdash | 90.0 | RF-TA-TP1 3" | 6010 | 12 | | 95: | 31.33% | |
| CR TOTAL (mg/Kg) | 01-E2-TA-001-3 | 9020 | | | T | 0.2 | RF-TA-TP13" | 6010 | 2 | 2 | 2 | SC | |
| CU TOTAL (mg/Kg) | 01-E2-TA-001-3 | 0209 | 349 | | T | 0.0 | RF-TA-TP1 3" | 6010 | | | 5 | 40.82% | |
| FE TOTAL (mg/Kg) | 01-E2-TA-001-3 | 8010B | 62200 | | \vdash | 4.5 | RF-TA-TP13" | 6010 | | | 2 | 21.90% | |
| H+ (mo/L) | 01-E2-TA-001-3 | 9045C | 3.39E-08 | | T | 1.0E-14 | | - | |] | [. | | |
| PB TOTAL (mg/kg) | 01-E2-TA-001-3 | 8010B | 3650 | | T | 22.4 | RF-TA-TP13" | 6010 | | | 2 | 7.13% | |
| SB TOTAL (mg/Kg) | 01-E2-TA-001-3 | 6020 | 9.18 | z | - | 90.0 | RF-TA-TP13' | 6010 | | | 5 | 64.90% | |
| SE TOTAL (mg/Kg) | 01-E2-TA-001-3 | 6020 | 1.2 | | T | = | RF-TA-TP1 3' | 6010 | | 3 | 5 | 2 | |
| TOTAL SOLIDS (PERCENT) | 01-E2-TA-001-3 | 160.3M | 74.3 | | | | | - - | | | | - | |
| ZN TOTAL (mg/Kg) | 01-E2-TA-001-3 | 8010B | 4760 | | \dagger | 2.2 | RF-TA-TP1 3' | 6010 | : १ में किस्तु के के | | 2 | 1.04% | |

NC - Not Calculated because one or both concentrations are non detects. All samples with Usability column left blank have been determined acceptable.
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RI. - Reponting Limit.
Vel Qual - Validator qualifier(s).
Lab Rem - Lab qualifier(s).

moVo - Milligrams per kilogram. moU - Milligrams per liter. S - Soll. W - Water. RPD - Relative Percent Difference.

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| | | CDN | ≥ | | | | | UPCM | | | | | |
|----------------------------|--|--------|----------|------------|-------------|---------|--------------|--------|------------|-----------|----------|---------|-------------------------------|
| Analyte | Sample ID | Method | Result | Lab Rem | Val Qual | 귵 | Sample ID | Method | Result Rem | Lab Be | 4 | RPD | Usability |
| TP3: RF-TA-TP3 2' 05092001 | 100 mg 10 | | | | | 1 | | | | | | | |
| AG TOTAL (mg/Kg) | 01-E2-TA-003-1 | 9020 | | | - | 0.21 | RF-TA-TP32' | 0109 | 41 | | 5 | 135.05% | 135.05% Unacceptable - 5x Rt. |
| AL TOTAL (mg/kg) | 01-E2-TA-003-1 | 80108 | | | - | 10.6 | RF-TA-TP3 2" | 6010 | 813 | | 25 | 145.28% | 145.28% Unacceptable - RPD |
| AS TOTAL (mg/kg) | 01-E2-TA-003-1 | 6020 | 201 | | \vdash | 0.5 | RF-TA-TP32 | 6010 | | | 2 | 4.85% | |
| CD TOTAL (mg/Kg) | 01-E2-TA-003-1 | 8020 | ! | | t | 90.0 | RF-TA-TP32' | 6010 | ន | | Si | 5.08% | |
| CR TOTAL (mg/Kg) | 01-E2-TA-003-1 | 6020 | 5.2 | | \vdash | 0.2 | RF-TA-TP32' | 6010 | | | 25 | 42.42% | |
| CU TOTAL (mg/kg) | 01-E2-TA-003-1 | 6020 | 133 | | | ë | RF-TA-TP3.2" | 6010 | | | s | 20.27% | |
| FE TOTAL (mg/kg) | 01-E2-TA-003-1 | 60108 | 34800 | | 1 | 4.2 | RF-TA-TP32' | 6010 | | | 2 | 30.86% | |
| H+ (mo/h.) | 01-E2-TA-003-1 | 9045C | 1.78E-08 | | ╀ | 1.0E-14 | | | | ŀ | | | |
| PB TOTAL (mg/kg) | 01-E2-TA-003-1 | 60108 | | | ╁ | 21.2 | RF-TA-TP3 2" | 6010 | 2750 | | 2 | 115.71% | Unacceptable - RPD |
| SB TOTAL (mg/kg) | 01-E2-TA-003-1 | 6020 | A. | z | - | 0.53 | RF-TA-TP3 2' | 6010 | 98 | | 2 | 92.16% | Unacceptable - RPD |
| SE TOTAL (mg/Kg) | 01-E2-TA-003-1 | 6020 | | | \dagger | = | RF-TA-TP3 2' | 6010 | 18 | | 2 | 35.24% | |
| TOTAL SOLIDS (PERCENT) | 01-E2-TA-003-1 | 160.3M | 7.87 | | \vdash | | | | | ŀ | | | |
| ZN TOTAL (mg/Kg) | 01-E2-TA-003-1 | 60108 | | | ╁ | 2.1 | RF-TA-TP3 2' | 6010 | 3510 | | 25 | 107.08% | 107.08% Unacceptable - RPD |

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mg/L - Miligrams per liter.
S - Soil.
W - Water.
HPD - Relative Percent Difference. All samples with Usability odurm left blank have been determined acceptable. Samples with PIDs above 50% and acceptable were determined acceptable based on the 5x rule. Shaded results are the higher of the two results.

pH has been represented as the hydrogen lon (in mc/L) to compare concentration RPDs. The calculation used to determine pH is: pH ≈ -log([i++]). He popularly Limit. Vel Qual - Validator qualifier(s).

Lab Rem - Lab qualifier(s).

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M:\Z280-RAC8\088-RichardsonFlats\Database\Current\May2001import.mdb rptSplitComparisonMay2001_01 07-18-01

Summary Statistics

| Alleys | | Semples | Non Detects | Acceptable 5x RL | Acceptable Acceptable 5x RL RPD | Total Acceptable | Total Total Acceptable Acceptable | Unacceptable 5x RL | Unacceptable RPD | Total Unacceptable | Total Unacceptable |
|--------------|---|---------|----------------|---------------------|------------------------------------|---------------------|-----------------------------------|-----------------------|---------------------|-----------------------|-----------------------|
| AG TOTAL | S | 5 | | | - | 12 | 93 94 K | | | - | 7.50% |
| * TOTAL | | | . | , | · | ! | 2 10 | - | • | - | e 83.7 |
| £ 101.5 | 2 | ٥ | 0 | | 9 | 9 | 83.33% | 0 | 1 | - | 16.67% |
| AS TOTAL | s | 8 | 1 | 19 | 2 | 52 | %8Z'68 | 0 | 8 | ဗ | 10.71% |
| CD TOTAL | s | 13 | 7 | 3 | 5 | 12 | 92.31% | o | 1 | - | 7.69% |
| CR TOTAL | s | 13 | - | 10 | - | 12 | 92.31% | 0 | 1 | - | 7.69% |
| CU TOTAL | s | 13 | ٥ | * | 7 | = | 84.62% | o | 2 | 2 | 15.38% |
| FE TOTAL | s | 9 | • | ٥ | 2 | 5 | 83.33% | 0 | 1 | 1 | 16.67% |
| PB TOTAL | s | 28 | 0 | , | 12 | 19 | 67.86% | 0 | 6 | 6 | 32.14% |
| SB TOTAL | s | 9 | 7 | - | 2 | 5 | 83.33% | 0 | 1 | - | 16.67% |
| SE TOTAL | S | 13 | 2 | 9 | 0 | 13 | 100.00% | 0 | 0 | 0 | %00:0 |
| ZN TOTAL | s | 13 | 0 | • | 6 | 6 | 69.23% | 0 | 7 | * | 30.77% |
| AG DISSOLVED | 3 | 2 | 8 | ٥ | • | 2 | 100.00% | 0 | 0 | 0 | %00:0 |
| AG TOTAL | ≥ | 2 | 2 | 0 | 0 | 2 | 100.00% | o | 0 | 0 | %00:0 |
| AL DISSOLVED | M | 2 | 2 | 0 | 0 | 2 | 100.00% | 0 | 0 | 0 | 0.00% |
| AL TOTAL | 3 | 7 | 2 | ٥ | 0 | 2 | 100.00% | o | 0 | 0 | 0.00% |
| ALKALINITY | М | 2 | 0 | 0 | 7 | 2 | 100.00% | o | 0 | 0 | 0.00% |
| AS DISSOLVED | м | 2 | 2 | 0 | 0 | 2 | 100.00% | | 0 | 0 | 0.00% |
| AS TOTAL | м | 2 | 1 | 1 | 0 | 2 | 100.00% | 0 | o | 0 | 0.00% |
| CD DISSOLVED | W | 2 | 1 | 0 | 1 | 2 | 100.00% | 0 | 0 | 0 | 0.00% |
| CD TOTAL | M | 2 | 1 | 0 | 1 | 7 | 100.00% | o | 0 | 0 | 0.00% |
| CHLORIDE | М | 2 | 0 | 0 | 2 | 2 | 100.00% | o | 0 | 0 | 0.00% |
| ထား | * | 2 | 7 | 0 | 0 | 2 | 100.00% | o | 0 | 0 | 0.00% |
| CONDUCTIVITY | 3 | 2 | 0 | 0 | 2 | 2 | 100.00% | 0 | 0 | 0 | 0.00% |
| CR DISSOLVED | М | 2 | 7 | 0 | 0 | 2 | 100.00% | | 0 | 0 | 0.00% |
| CR TOTAL | М | 2 | 2 | 0 | 0 | 2 | 100.00% | 0 | 0 | 0 | 0.00% |
| CU DISSOLVED | * | 2 | 0 | 1 | 0 | - | 50.00% | - | 0 | - | 20.00% |
| CU TOTAL | м | 7 | 0 | 0 | 0 | 0 | %00'0 | 2 | 0 | 2 | 100.00% |
| FE DISSOLVED | × | 2 | 2 | 0 | 0 | 2 | 100.00% | 0 | 0 | 0 | 0.00% |
| FE TOTAL | М | 2 | ı | 1 | 0 | 7 | %00'00t | ٥ | 0 | 0 | %0ó:0 |
| ÷ | * | 2 | 0 | 0 | 0 | 0 | %00'0 | 0 | 2 | 2 | 100.00% |

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M13280-RAC8088-RichardsonFlats\Database\Qurent\May2001Import.mdb mtSplitComparisonMay2001_01 07-18-01

| APD 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | Analyte | Media | Total | Non | Acceptable | Acceptable Acceptable | Total | Total | Unacceptable | Unacceptable | Total | Total |
|---|------------------------|-------|---------|---------|------------|-----------------------|------------|-----------------------|--------------|--------------|--------------|--------------|
| DMESS W 2 0 0 2 2 100,00% 0 0 0 3 W 2 0 0 2 2 100,00% 0 0 MSSOLVED W 2 0 0 2 100,00% 0 0 OTAL W 2 0 0 2 100,00% 0 0 TAL W 2 2 0 0 0 0 0 0 TAL W 2 0 0 2 100,00% 0 <td< th=""><th></th><th></th><th>Samples</th><th>Detects</th><th>5x PL</th><th>G R</th><th>Acceptable</th><th>Acceptable Percent</th><th>Sx Pt</th><th>AP.</th><th>Unacceptable</th><th>Unacceptable</th></td<> | | | Samples | Detects | 5x PL | G R | Acceptable | Acceptable Percent | Sx Pt | AP. | Unacceptable | Unacceptable |
| 3 9 7 2 0 0 2 2 100.00% 0 </td <td>HARDNESS</td> <td>3</td> <td>2</td> <td>-</td> <td>•</td> <td>2</td> <td>2</td> <td>100.00%</td> <td>0</td> <td>0</td> <td>0</td> <td>%00.0</td> | HARDNESS | 3 | 2 | - | • | 2 | 2 | 100.00% | 0 | 0 | 0 | %00.0 |
| OTAL W 2 0 0 2 2 100.00% 0 0 OTAL W 2 0 0 2 2 100.00% 0 0 TAL W 2 2 0 0 2 100.00% 0 0 TAL W 2 0 2 100.00% 0 0 0 ISSOLVED W 2 1 0 1 2 100.00% 0 | нсоз | 3 | 2 | | • | 2 | 2 | 100.00% | 0 | 0 | 0 | %00.0 |
| OTAL W 2 0 0 2 100.00% 0 | MN DISSOLVED | 3 | 2 | | | 2 | 2 | 100.00% | 0 | 0 | 0 | 0.00% |
| TAL W 2 2 0 0 2 100.00% 0 | INN TOTAL | 3 | 2 | | ٥ | 2 | 2 | 100.00% | 0 | 0 | 0 | %00:0 |
| USSOLVED W 2 0 2 0 2 100.00% 0 | P TOTAL | 3 | 2 | ~ | 0 | • | 2 | 100.00% | 0 | 0 | 0 | 0.00% |
| OTAL W 2 1 0 1 2 100.00% 0 | PB DISSOLVED | 3 | 2 | | 2 | ٥ | 2 | 100.00% | 0 | 0 | 0 | %00:0 |
| USSOLVED W 2 1 1 0 2 100.00% 0 | PB TOTAL | 3 | 2 | - | 0 | - | 2 | 100.00% | 0 | ° | 0 | %00:0 |
| OTAL W 2 0 2 0 2 100.00% 0 0 0 SSOLVED W 2 2 0 0 2 100.00% 0 0 0 OTAL W 2 2 0 0 2 100.00% 0 0 0 AL SOLIDS DISSOLVED W 2 0 0 2 100.00% 0 0 0 AL SOLIDS SUSPENDED W 2 0 0 2 100.00% 0 0 0 SISSOLVED W 2 0 0 2 100.00% 0 0 0 SISSOLVED W 2 0 0 2 100.00% 0 0 0 OTAL W 2 0 2 100.00% 0 0 0 | SB DISSOLVED | 3 | 2 | - | - | - | 2 | 100.00% | 0 | 0 | 0 | 0.00% |
| ASSOLVED W 2 2 0 0 2 100.00% 0 0 OTAL W 2 2 0 0 2 100.00% 0 0 0 AL SOLIDS DISSOLVED W 2 0 0 2 2 100.00% 0 0 0 AL SOLIDS SUSPENDED W 2 0 0 2 100.00% 0 0 0 SISOLVED W 2 0 0 2 100.00% 0 0 0 OTAL W 2 0 0 2 100.00% 0 0 0 | SB TOTAL | 3 | 2 | 0 | ~ | ٥ | 2 | 100.00% | 0 | 0 | 0 | %00:0 |
| OTAL W 2 2 0 0 2 100.00% 0 | SE DISSOLVED | 3 | 2 | 2 | 0 | • | 2 | 100.00% | 0 | • | 0 | %00.0 |
| AL SOLIDS DISSOLVED W 2 0 0 2 2 100.00% 0 0 AL SOLIDS SUSPENDED W 2 0 0 2 2 100.00% 0 0 0 ISSOLVED W 2 0 0 2 100.00% 0 0 0 OTAL W 2 0 0 2 2 100.00% 0 0 | SE TOTAL | 3 | 2 | 2 | ٥ | ٥ | 2 | 100.00% | 0 | 0 | 0 | %00·0 |
| DISSOLVED W 2 0 0 2 100.00% 0 0 SUSPENDED W 2 2 0 0 2 100.00% 0 0 W 2 0 0 2 100.00% 0 0 0 W 2 0 0 2 2 100.00% 0 0 | 9O4 | 3 | 2 | ٥ | 0 | 2 | 2 | 100.00% | 0 | 0 | 0 | %00.0 |
| SUSPENDED W 2 2 0 0 2 100.00% 0 0 W 2 0 0 2 2 100.00% 0 0 W 2 0 0 2 2 100.00% 0 0 | TOTAL SOLIDS DISSOLVED | 3 | 2 | 0 | 0 | 2 | 2 | 100.00% | 0 | 0 | 0 | 0.00% |
| W 2 0 0 2 2 100.00% 0 0 0 W 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | TOTAL SOLIDS SUSPENDED | ≩ | 2 | 2 | 0 | • | 2 | 100.00% | • | 0 | 0 | %00.0 |
| W 2 0 0 2 2 100.00% 0 0 | ZN DISSOLVED | м | 2 | ŀ | ° | 2 | 2 | 100.00% | o | 0 | 0 | %00.0 |
| | ZN TOTAL | * | 2 | | ° | 2 | 2 | 100.00% | 0 | • | 0 | 0.00% |

| | Total Samples Compared | 222 |
|-------------|---------------------------|--------------|
| | Acceptable | Unacceptable |
| 5x RL | 58 | 4 |
| RPD | 9/ | 25 |
| Non Detects | 69 | ΑN |
| Total | 193 | 29 |
| Percent | 86.94% | 13.06% |
| | | |

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